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AIWA® SERVICE MANUAL

S/M Code No. 86-015

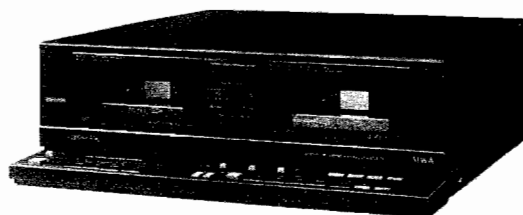
DATE OF ISSUE 4/1986-Z

**STEREO CASSETTE
DECK**

MODEL NO.

FX-W440

Basic mechanism 2ME-1 (II)
2ME-4 (I)



TYPE. YB, YUB

SPECIFICATIONS

Type	Stereo cassette tape deck
Track format	4 tracks, 2 channels
Frequency response	METAL tape: 20–17,000 Hz CrO ₂ tape: 20–16,000 Hz NORMAL tape: 20–15,000 Hz
Signal-to-noise ratio	73 dB (METAL tape DOLBY C NR ON)
Wow and flutter	According to DIN 45 500 0.18% 0.065% (WRMS)
Tape speed	4.8 cm/sec. (1-7/8 ips), 9.5 cm/sec (Double speed)
Rewind time	90 sec. (C-60)
Fast forward time	90 sec. (C-60)
Recording system	AC bias (frequency 100 kHz)
Erase system	AC erase
Motor	DC Servomotor × 2
Heads	Playback head × 1 (Deck I) Record/playback head × 1 (Deck II) Erase head × 1 (Deck II)
Inputs	Standard input Level: 250 mV (over 47 k Ω)
Outputs	Standard output level: 280 mV (0 VU) Suitable load impedance: over 47 k Ω.

Dimensions 330 (W) × 106.5 (H) × 345 (D) mm
Weight 3.9 kg

- Design and specifications are subject to change without notice.
- Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
- Dolby and the  symbol are trademarks of Dolby Laboratories Licensing Corporation.

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6. General instructions for mechanism repair

- 1) The heads, capstan and pinch roller shall be cleaned of good quality alcohol after repaired, because dirty heads shall cause distorted sounds while dirty capstan and pinch roller shall occur wow/flutter and take-up fault.
- 2) Lubricants been stained the surfaces of transmitting portion of the belts, idlers, capstan and pinch roller shall be removed, because slippery and faulty tape travel shall be caused.
- 3) When oiling, only one or two drops shall be applied so as not to run over and be dispersed. Note should be taken of the metal fitting for the capstan and rotating portions of the idlers and pinch roller, especially.
- 4) E-rings and poly slider washers shall be replaced with new ones, if once those have been removed. — No re-utilization due to unreliability.
- 5) Regular spare-parts shall always be used for repair, because using irregular parts and tampering with the products shall cause deterioration, malfunction and damage.

Rating : More than 1M Ω /500V DC

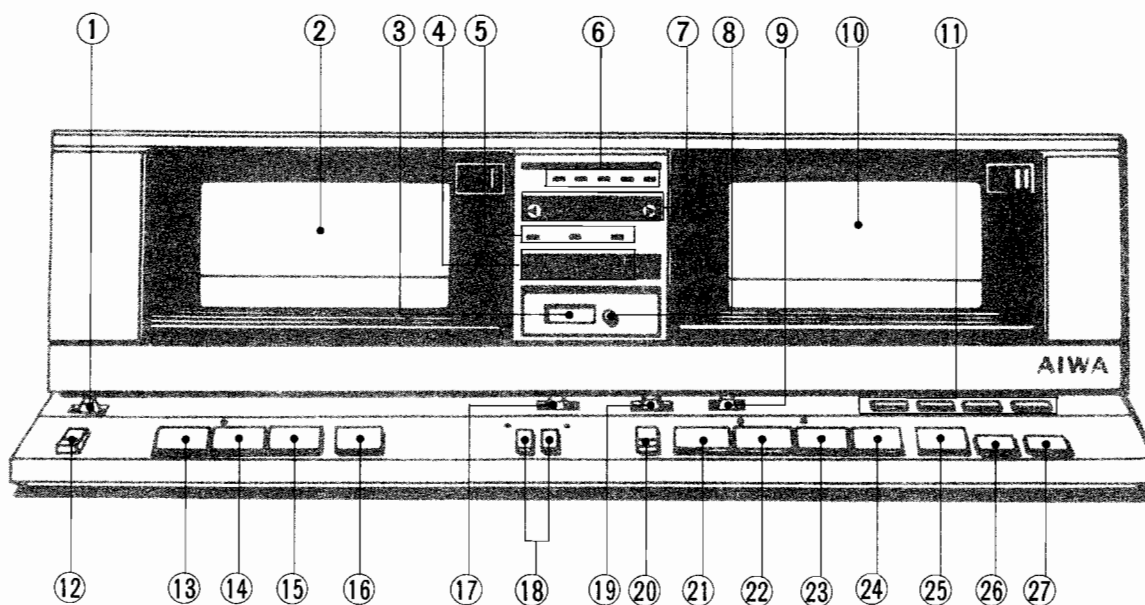
Connect to Chassis or Outside (⇨) of Pin Jack

Pin Jack (+)

Chassis (-)

AC Power Cord (+)

DESIGNATION OF CONTROLS



- ① BLANK SKIP switch
- ② Cassette holder (Deck I)
- ③ TAPE COUNTER (Deck II)
- ④ DOLBY B-C NR indicators
- ⑤ REVERSE MODE indicator (Deck II)
- ⑥ Peak program meters
(5 POINT PEAK PROGRAM METER)
- ⑦ Tape direction indicator (DIRECTION) (Deck II)
- ⑧ Reset button (COUNTER RESET) (Deck II)
- ⑨ REVERSE MODE selector (Deck II)
- ⑩ Cassette holder (Deck II)
- ⑪ Record button (SYNCHRO RECORDING)
- ⑫ EJECT button (Deck I)
- ⑬ REW/REVIEW button (◀◀) (Deck I)

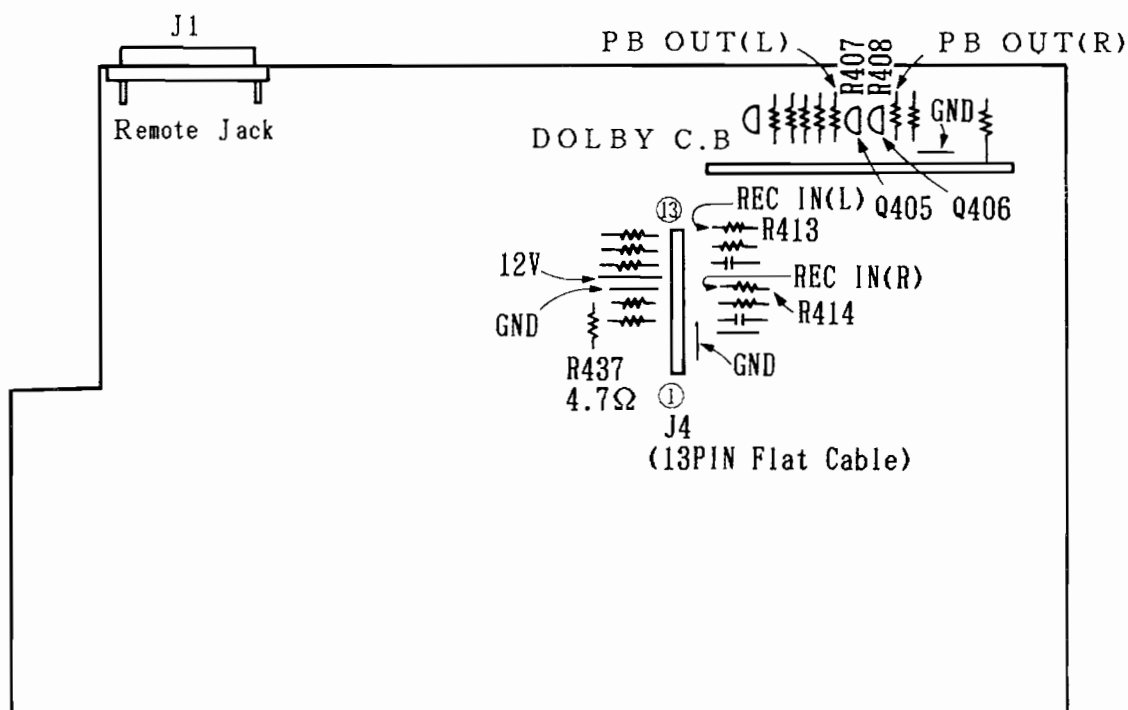
- ⑭ PLAY button (Deck I)
- ⑮ F FWD/CUE button (▶▶) (Deck I)
- ⑯ STOP button (Deck I)
- ⑰ TIMER switch
- ⑱ Dubbing buttons (SYNCHRO DUBBING)
- ⑲ DOLBY B-C NR selector (Deck I) (Deck II)
- ⑳ EJECT button (Deck II)
- ㉑ Fast forward/MS button (◀◀/MS) (Deck II)
- ㉒ REV PLAY button (Deck II)
- ㉓ PLAY button (Deck II)
- ㉔ Fast forward/MS button (▶▶/MS) (Deck II)
- ㉕ STOP button (Deck II)
- ㉖ PAUSE button (Deck II)
- ㉗ REC MUTE button (Deck II)

CAUTIONS WHEN SERVICING

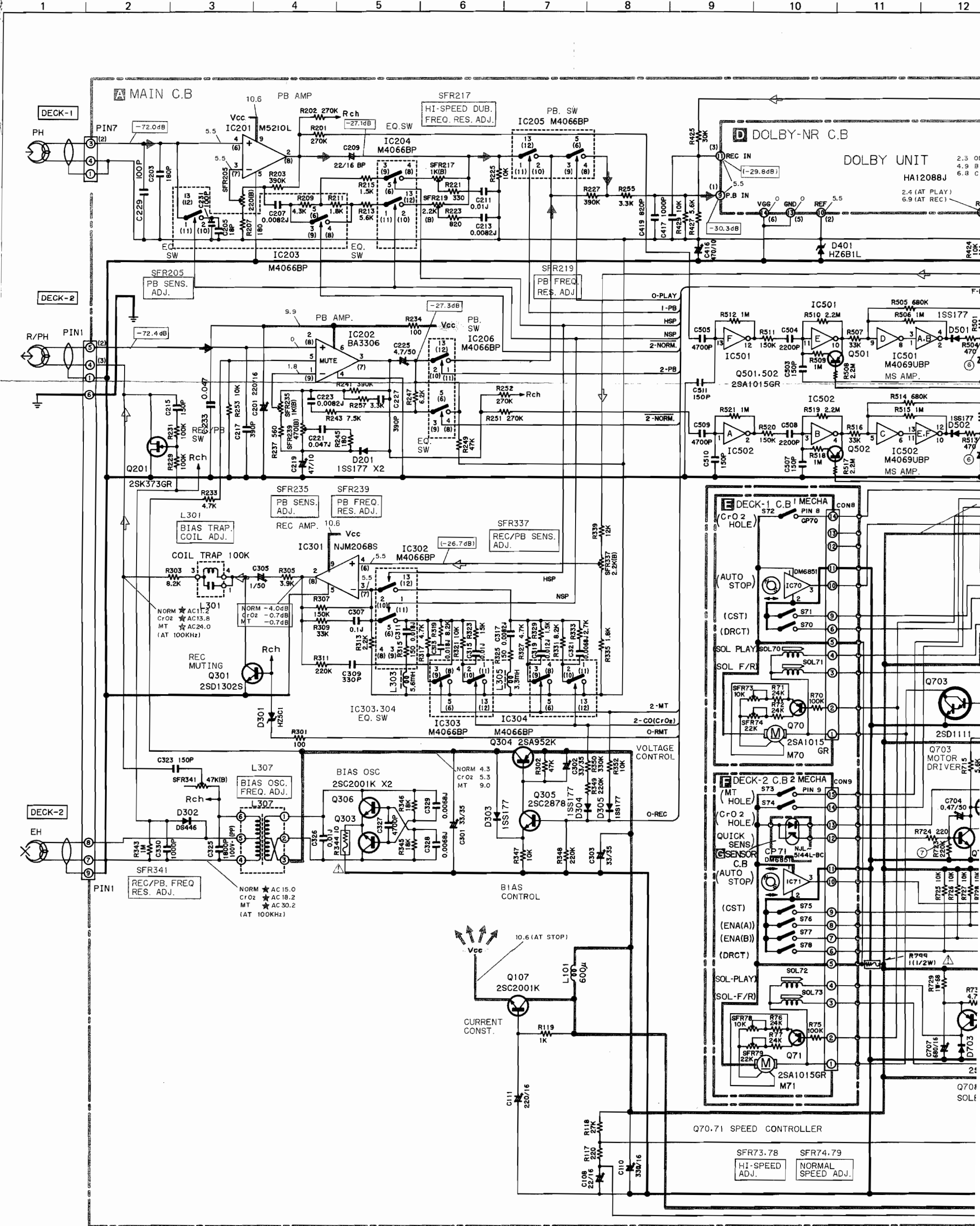
The FX-W440 does not mount a power supply circuit, and the power is supplied to this unit via a 13-pin flat cable and the signals are also input and output via this cable. Connect the FX-W440 to the MX-440, 330 when servicing the FX-W440. If MX-440, 330 is not available service the FX-W440 by following procedure.

[When servicing without MX-440, 330]

Connect 12V from an external power supply to the jumper shown in Fig. 1. Connect the signals for input and output to the leads of the resistors.



Note: To measure the characteristic such as S/N ratio in this condition, short circuit R437 4.7Ω. It is not necessary to short circuit R437 to check the general performance.





ELECTRICAL MAIN PARTS LIST

- +++ mark denotes a component of assembled part which part code is represented by a previously stated component.
- *-mark means less required items and availabilities may be limited.

CAPACITORS
No mark, U, UF: μ F
P, PF : pF

COILS
MMH: mH
UH : μ H

FUSE
MMA: mA

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description			
=== IC ===			C408	* 87-010-406	CAP,ELECT 22-50 SME	D710	87-020-110	DIODE 1SS177	D830	87-020-110	DIODE 1SS177	SFR74	* 87-021-824	SFR 10			
	87-020-290	IC,AN6886	C409	* 87-010-248	CAP,ELECT 220-10SME	D711	87-020-110	DIODE 1SS177	D831	87-020-110	DIODE 1SS177	SOL70	86-517-611	SOLENO			
	87-020-723	IC,BA3306	C410	* 87-010-404	CAP,ELECT 4.7-50 SME	D713	87-020-110	DIODE 1SS177	D832	87-020-110	DIODE 1SS177	SOL71	86-517-612	SOLENO			
	87-020-454	IC,DM6851	C411	* 87-010-404	CAP,ELECT 4.7-50 SME	D714	87-020-110	DIODE 1SS177	D833	87-020-110	DIODE 1SS177	=== DECK-2 CIRCUIT BOARD S					
	87-020-261	IC,LA6358S	C412	* 87-010-404	CAP,ELECT 4.7-50 SME	D715	87-020-110	DIODE 1SS177	D834	87-020-110	DIODE 1SS177	PCB-F	*	DECK-2			
	82-114-630	IC,LC6523C-782	C413	* 87-010-404	CAP,ELECT 4.7-50 SME	D716	87-020-110	DIODE 1SS177	D835	87-020-110	DIODE 1SS177	S73	86-517-621	LEAF S			
	82-112-632	IC,LC6523C-3055	C414	* 87-010-404	CAP,ELECT 4.7-50 SME	D717	87-020-110	DIODE 1SS177	LED801*	87-020-168	LED,SLP177B (HIGH)	S74	86-517-621	LEAF S			
	87-020-096	IC,M4066BP	C416	* 87-010-221	CAP,ELECT 470-10	D718	87-020-110	DIODE 1SS177	LED802*	87-020-168	LED,SLP177B (NORMAL)	S75	86-517-621	LEAF S			
	87-020-533	IC,M4069UBP	C417	* 87-018-044	CAP,CERA-SOL S 1000P	D719	87-020-110	DIODE 1SS177	LED803*	87-020-169	LED,SLP-277B (DECK-1,PLAY)	S76	86-517-621	LEAF S			
	87-020-679	IC,M4572BP	C418	* 87-018-044	CAP,CERA-SOL S 1000P	D720	87-020-110	DIODE 1SS177	LED805*	87-020-169	LED,SLP-277B (DECK-2,PLAY)	S77	86-517-621	LEAF S			
	87-027-952	IC,M51544 AL	C419	* 87-018-043	CAP,CERA-SOL S 820P	D721	87-020-110	DIODE 1SS177	LED806*	87-020-169	LED,SLP-277B (DECK-2,REV PLAY)	S78	87-031-874	LEAF S			
	87-020-680	IC,NJM2068S	C420	* 87-018-043	CAP,CERA-SOL S 820P	D722	87-020-110	DIODE 1SS177	LED807*	87-020-170	LED,SLP477B (PAUSE)	SFR78	* 87-021-825	SFR 22			
=== TRANSISTOR ===			C421	* 87-010-101	CAP,ELECT 220-16 SME	D723	87-020-110	DIODE 1SS177	LED808*	87-020-168	LED,SLP177B (REC MUTE)	SFR79	* 87-021-824	SFR 10			
	89-503-735	FET,2SK373GR	C422	* 87-018-378	CAP,ELECT 16-10 SME	D724	87-027-286	DIODE,ZENER HZ-5C1	LED809*	87-020-168	LED,SLP177B (TUNER)	SOL72	86-517-611	SOLENO			
	89-109-521	TRANSISTOR,2SA952K	C501	* 87-010-371	CAP,ELECT 470-6.3	D725	87-020-110	DIODE 1SS177	LED810*	87-020-168	LED,SLP177B (AUX)	SOL73	86-517-612	SOLENO			
	89-110-155	TRANSISTOR,2SA1015,GR	C502	* 87-010-401	CAP,ELECT 1-50 SME	J1	* 87-049-659	BP CONNECTOR SOCKET 13P (REMOTE)	LED811*	87-020-168	LED,SLP177B (CD)	=== SENSOR CIRCUIT BOARD S					
	89-318-155	TRANSISTOR,2SC1815,GR	C503	* 87-018-034	CAP,CERA-SOL S 150P	L7	* 82-112-631	COIL,OSC BIAS 100K	LED812*	87-020-168	LED,SLP177B (PHONO)	PCB-G	*	SENSOR			
	89-320-011	TRANSISTOR,2SC2001K	C504	* 87-018-045	CAP,CERA-SOL 2200P	L101	* 82-401-661	COIL,CHOKE,600UH	S801	87-031-893	TACT (DECK-1,F.FWD/CUE ►►)	CP71	* 87-020-457	POHOTO			
	89-328-785	TRANSISTOR,2SC2878 AB	C505	* 87-018-046	CAP,CERA-SOL S 0.0047	L301	* 82-196-603	COIL,TRAP,100K	S803	87-031-893	TACT SW (DECK-1,STOP ■)	=== MISCELLANEOUS ===					
	89-413-023	TRANSISTOR,2SD1111	C506	* 87-010-401	CAP,ELECT 1-50 SME	L302	* 82-196-603	COIL,TRAP,100K	S804	87-031-893	TACT SW (HIGH)	82-598-622	E HEAD				
	89-411-110	TRANSISTOR,2SD1302S	C507	* 87-018-034	CAP,CERA-SOL S 150P	L303	* 87-003-128	COIL,5.6MMHJ	S805	87-031-893	TACT SW (NORMAL)	CON1	* 82-146-633	CONNECT			
=== MAIN CIRCUIT BOARD SECTION ===			C508	* 87-018-045	CAP,CERA-SOL 2200P	L304	* 87-003-128	COIL,5.6MMHJ	S806	87-031-893	TACT SW (DECK-1,PLAY ►)	CON7	* 82-138-616	CONNECT			
PCB-A	*	MAIN CIRCUIT BOARD	C509	* 87-018-046	CAP,CERA-SOL S 0.0047	L305	* 87-003-125	COIL,3.3MMHJ	S807	87-031-893	TACT SW (DECK-1,REW/REVIEW ◀◀)	J4	* 82-115-651	CONNECT			
C108	* 87-010-379	CAP,ELECT 22-16 SME	C510	* 87-018-034	CAP,CERA-SOL S 150P	L306	* 87-003-125	COIL,3.3MMHJ	S808	87-031-893	TACT SW (DECK-2,MS ►►)	* 81-757-602	JUMPER				
C110	* 87-010-381	CAP,ELECT 330-16 SME	C702	* 87-010-429	CAP,ELECT,SME 680-16V	△ R344	87-029-015	RES,FUSE 1/4W-10	S809	87-031-893	TACT SW (DECK-2,MS ◀◀)	M70	87-045-235	MOTOR M			
C111	* 87-010-101	CAP,ELECT 220-16 SME	C703	* 87-010-429	CAP,ELECT,SME 680-16V	△ R630	87-029-107	RES,FUSE 1/4W-3.3 (YU,ONLY)	S810	87-031-893	TACT SW (DECK-2,STOP ■)	M71	87-045-235	MOTOR M			
C201	* 87-010-101	CAP,ELECT 220-16 SME	C704	* 87-010-400	CAP,ELECT 0.47-50 SME	R709	* 87-025-406	RES,MF 1W-68	S811	87-031-893	TACT SW (DECK-2,PLAY ►)	PH	87-046-261	P HEAD			
C203	* 87-018-035	CAP,CERA-SOL 180P	C705	* 87-010-374	CAP,ELECT 47-10V	R729	* 87-025-406	RES,MF 1W-68	S812	87-031-893	TACT SW (DECK-2,REV PLAY ◀)	RPEH	87-046-275	RP/E HE			
C204	* 87-018-035	CAP,CERA-SOL 180P	C707	* 87-010-429	CAP,ELECT,SME 680-16V	R732	* 87-025-406	RES,MF 1W-68	S813	87-031-893	TACT SW (PAUSE II)	Safety component symbol This symbol is given to important the safety of the product, and which safety specifications. Therefore, wh this symbol, make absolutely sure th					
C205	* 87-018-014	CAP,CERA-SOL 18P	C708	* 87-010-429	CAP,ELECT,SME 680-16V	R794	* 87-025-406	RES,MF 1W-68	S814	87-031-893	TACT SW (REC MUTE ○)						
C206	* 87-018-014	CAP,CERA-SOL 18P	C709	* 87-010-101	CAP,ELECT 220-16 SME	△ R799	87-029-108	RES,FUSE 1/2W-1	S815	87-031-893	TACT SW (TUNER)						
C209	* 87-015-668	CAP,ELECT BP 22-16	C710	* 87-018-044	CAP,CERA-SOL S 1000P	SFR205*	87-021-735	SFR 220	S816	87-031-893	TACT SW (AUX)						
C210	* 87-015-668	CAP,ELECT BP 22-16	C713	* 87-018-044	CAP,CERA-SOL S 1000P	SFR206*	87-021-735	SFR 220	S817	87-031-893	TACT SW (CD)	IC handling precaution IC's construction makes this part electricity and so take sufficient ca					
C215	* 87-018-034	CAP,CERA-SOL S 150P	C714	* 87-018-044	CAP,CERA-SOL S 1000P	SFR217*	87-021-738	SFR 1K	S818	87-031-893	TACT SW (PHONO)						
C216	* 87-018-034	CAP,CERA-SOL S 150P	C715	* 87-018-044	CAP,CERA-SOL S 1000P	SFR218*	87-021-738	SFR 1K	S819	87-031-929	SLIDE SW SSS-322 (BLANK SKIP)						
C217	* 87-018-039	CAP,CERA-SOL S 390P	C716	* 87-018-044	CAP,CERA-SOL S 1000P	SFR219*	87-021-739	SFR 2.2K	S820	87-031-724	SLIDE SW 2-2-3 (REVERSE MODE)						
C218	* 87-018-039	CAP,CERA-SOL S 390P	D201	87-020-110	DIODE 1SS177	SFR220*	87-021-739	SFR 2.2K	S821	87-031-928	SLIDE SW SSS-313 (TIMER)	1. Need to be put on conductive s and to be wrapped by alumin					
C219	* 87-010-374	CAP,ELECT 47-10V	D202	87-020-110	DIODE 1SS177	SFR235*	87-021-738	SFR 1K	S822	87-031-928	SLIDE SW SSS-313 (DOLBY B-C NR)						
C220	* 87-010-374	CAP,ELECT 47-10V	D301	87-027-286	DIODE,ZENER HZ-5C1	SFR236*	87-021-738	SFR 1K	=== LED CIRCUIT BOARD SECTION ===								
C225	* 87-010-404	CAP,ELECT 4.7-50 SME	D302	87-020-123	DIODE DS446	SFR239*	87-021-737	SFR 470	PCB-C	*	LED,CIRCUIT BOARD						
C226	* 87-010-404	CAP,ELECT 4.7-50 SME	D303	87-020-110	DIODE 1SS177	SFR240*	87-021-737	SFR 470	D915	87-020-110	DIODE 1SS177	2. To use solder iron less than 4 consumption for soldering. But					
C227	* 87-018-039	CAP,CERA-SOL S 390P	D304	87-020-110	DIODE 1SS177	SFR337*	87-021-739	SFR 2.2K	D917	87-020-110	DIODE 1SS177						
C228	* 87-018-039	CAP,CERA-SOL S 390P	D305	87-020-110	DIODE 1SS177	SFR338*	87-021-739	SFR 2.2K	LED901*	87-020-613	LED,LN-317GPH (PEAK PROG.METER,-10)						
C301	* 87-010-392	CAP,ELECT 33-35 SME	D401	87-027-332	DIODE,ZENER HZ681L	=== KEY BOARD CIRCUIT BOARD SECTION ===			LED902*	87-020-613	LED,LN-317GPH (PEAK PROG.METER,-5)						
C302	* 87-010-392	CAP,ELECT 33-35 SME	D402	87-020-110	DIODE 1SS177	PCB-B	*	KEY BOARD CIRCUIT BOARD	LED903*	87-020-613	LED,LN-317GPH (PEAK PROG.METER,0)	3. Do not perform a conductivity the circuit voltages of each part.					
C303	* 87-010-392	CAP,ELECT 33-35 SME	D403	87-027-332	DIODE,ZENER HZ681L	D813	87-020-110	DIODE 1SS177	LED904*	87-020-612	LED,LN-217RPH (PEAK PROG.METER,+3)						
C305	* 87-010-401	CAP,ELECT 1-50 SME	D404	87-020-110	DIODE,1SS177	D815	87-020-110	DIODE 1SS177	LED905*	87-020-612	LED,LN-217RPH (PEAK PROG.METER,+6)						
C306	* 87-010-401	CAP,ELECT 1-50 SME	D501	87-020-110	DIODE 1SS177	D816	87-020-110	DIODE 1SS177	LED907*	87-020-399	LED,LN350GPH (DECK-1,DIRECTION ►)						
C309	* 87-018-038	CAP,CERA-SOL S 330P	D502	87-020-110	DIODE 1SS177	D817	87-020-110	DIODE 1SS177	LED908*	87-020-399	LED,LN350GPH (DECK-2,DIRECTION ►)						

part which part code
nt.
ities may be limited.

CAPACITORS
No mark, U, UF: μ F
P, PF : pF

COILS
MMH: mH
UH : μ H

FUSE
MMA: mA

Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
LECT 22-50 SME	D710	87-020-110	DIODE 1SS177	D830	87-020-110	DIODE 1SS177	SFR74 ★	87-021-824	SFR 10K
LECT 220-10SME	D711	87-020-110	DIODE 1SS177	D831	87-020-110	DIODE 1SS177	SOL70	86-517-611	SOLENOID 2ME-1A
LECT 4.7-50 SME	D713	87-020-110	DIODE 1SS177	D832	87-020-110	DIODE 1SS177	SOL71	86-517-612	SOLENOID 2ME-1B
LECT 4.7-50 SME	D714	87-020-110	DIODE 1SS177	D833	87-020-110	DIODE 1SS177	=== DECK-2 CIRCUIT BOARD SECTION ===		
LECT 4.7-50 SME	D715	87-020-110	DIODE 1SS177	D834	87-020-110	DIODE 1SS177	PCB-F	*	DECK-2 CIRCUIT BOARD
LECT 4.7-50 SME	D716	87-020-110	DIODE 1SS177	D835	87-020-110	DIODE 1SS177	S73	86-517-621	LEAF SW (DECK-2,MT)
LECT 4.7-50 SME	D717	87-020-110	DIODE 1SS177	LED801★	87-020-168	LED,SLP177B (HIGH)	S74	86-517-621	LEAF SW (DECK-2,CO)
LECT 470-10	D718	87-020-110	DIODE 1SS177	LED802★	87-020-168	LED,SLP177B (NORMAL)	S75	86-517-621	LEAF SW (DECK-2,CST)
ERA-SOL S 1000P	D719	87-020-110	DIODE 1SS177	LED803★	87-020-169	LED,SLP-277B (DECK-1,PLAY)	S76	86-517-621	LEAF SW (DECK-2,ENA A)
ERA-SOL S 1000P	D720	87-020-110	DIODE 1SS177	LED805★	87-020-169	LED,SLP-277B (DECK-2,PLAY)	S77	86-517-621	LEAF SW (DECK-2,ENA B)
ERA-SOL S 820P	D721	87-020-110	DIODE 1SS177	LED806★	87-020-169	LED,SLP-277B (DECK-2,REV PLAY)	S78	87-031-874	LEAF SW (DECK-2,DIRECT)
ERA-SOL S 820P	D722	87-020-110	DIODE 1SS177	LED807★	87-020-170	LED,SLP477B (PAUSE)	SFR78 ★	87-021-825	SFR 22K
LECT 220-16 SME	D723	87-020-110	DIODE 1SS177	LED808★	87-020-168	LED,SLP177B (REC MUTE)	SFR79 ★	87-021-824	SFR 10K
LECT 16-10 SME	D724	87-027-286	DIODE,ZENER HZ-5C1	LED809★	87-020-168	LED,SLP177B (TUNER)	SOL72	86-517-611	SOLENOID 2ME-1A
LECT 470-6.3	D725	87-020-110	DIODE 1SS177	LED810★	87-020-168	LED,SLP177B (AUX)	SOL73	86-517-612	SOLENOID 2ME-1B
LECT 1-50 SME	J1	★ 87-049-659	BP CONNECTOR SOCKET 13P (REMOTE)	LED811★	87-020-168	LED,SLP177B (CD)	=== SENSOR CIRCUIT BOARD SECTION ===		
ERA-SOL S 150P	L7	★ 82-112-631	COIL,OSC BIAS 100K	LED812★	87-020-168	LED,SLP177B (PHONO)	PCB-G	*	SENSOR CIRCUIT BOARD
ERA-SOL 2200P	L101	★ 82-401-661	COIL,CHOKE,600UH	S801	87-031-893	TACT (DECK-1,F.FWD/CUE ►►)	CP71	★ 87-020-457	PHOTO SENSOR NJM-5144L-BG
ERA-SOL S 0.0047	L301	★ 82-196-603	COIL,TRAP,100K	S803	87-031-893	TACT SW (DECK-1,STOP ■)	=== MISCELLANEOUS ===		
LECT 1-50 SME	L302	★ 82-196-603	COIL,TRAP,100K	S804	87-031-893	TACT SW (HIGH)	CON1	82-598-622	E HEAD DUMMY
ERA-SOL S 150P	L303	★ 87-003-128	COIL,5.6MMHJ	S805	87-031-893	TACT SW (NORMAL)	CON7	★ 82-146-633	CONNECTOR,ASSY RVS HEAD
ERA-SOL 2200P	L304	★ 87-003-128	COIL,5.6MMHJ	S806	87-031-893	TACT SW (DECK-1,PLAY ►)	J4	★ 82-138-616	CONNECTOR,ASSY 4P HEAD
ERA-SOL S 0.0047	L305	★ 87-003-125	COIL,3.3MMHJ	S807	87-031-893	TACT SW (DECK-1,REW/REVIEW ◀◀)		★ 82-115-651	CONNECTION CORD 13P
ERA-SOL S 150P	L306	★ 87-003-125	COIL,3.3MMHJ	S808	87-031-893	TACT SW (DECK-2,MS ►►)		★ 81-757-602	JUMPER HOUSING 13P
ERA-SOL S 150P	L701	★ 82-114-634	COIL,OSC,LC6523C	S809	87-031-893	TACT SW (DECK-2,MS ◀◀)	M70	87-045-235	MOTOR MMA6B2LW (DECK-1)
LECT,SME 680-16V	△ R344	87-029-015	RES,FUSE 1/4W-10	S810	87-031-893	TACT SW (DECK-2,STOP ■)	M71	87-045-235	MOTOR MMA6B2LW (DECK-2)
LECT,SME 680-16V	△ R630	87-029-107	RES,FUSE 1/4W-3.3 (YU,ONLY)	S811	87-031-893	TACT SW (DECK-2,PLAY ►)	PH	87-046-261	P HEAD (DECK-1)
LECT 0.47-50 SME	R709	★ 87-025-406	RES,MF 1W-68	S812	87-031-893	TACT SW (DECK-2,REV PLAY ◀)	RPEH	87-046-275	RP/E HEAD HADKH 5503A (DECK-2)
LECT 47-10V	R729	★ 87-025-406	RES,MF 1W-68	S813	87-031-893	TACT SW (PAUSE ■■)	△ Safety component symbol This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.		
LECT,SME 680-16V	R732	★ 87-025-406	RES,MF 1W-68	S814	87-031-893	TACT SW (REC MUTE ○)			
LECT,SME 680-16V	R794	★ 87-025-406	RES,MF 1W-68	S815	87-031-893	TACT SW (TUNER)			
LECT 220-16 SME	△ R799	87-029-108	RES,FUSE 1/2W-1	S816	87-031-893	TACT SW (AUX)			
ERA-SOL S 1000P	SFR205★	87-021-735	SFR 220	S817	87-031-893	TACT SW (CD)	IC handling precaution IC's construction makes this part susceptible to damage by static electricity and so take sufficient care in regard to following articles. 1. Need to be put on conductive sheet, to be put in a metallic box and to be wrapped by aluminium foil for transportation and deposit. 2. To use solder iron less than 40W (less than 260°C) of power consumption for soldering. But do not overheat more than 10 second. 3. Do not perform a conductivity test with a tester, etc. Refer to the circuit voltages of each part.		
ERA-SOL S 1000P	SFR206★	87-021-735	SFR 220	S818	87-031-893	TACT SW (PHONO)			
ERA-SOL S 1000P	SFR217★	87-021-738	SFR 1K	S819	87-031-929	SLIDE SW SSS-322 (BLANK SKIP)			
ERA-SOL S 1000P	SFR218★	87-021-738	SFR 1K	S820	87-031-724	SLIDE SW 2-2-3 (REVERSE MODE)			
ERA-SOL S 1000P	SFR219★	87-021-739	SFR 2.2K	S821	87-031-928	SLIDE SW SSS-313 (TIMER)	=== LED CIRCUIT BOARD SECTION ===		
1SS177	SFR220★	87-021-739	SFR 2.2K	S822	87-031-928	SLIDE SW SSS-313 (DOLBY B-C NR)			
1SS177	SFR235★	87-021-738	SFR 1K	PCB-C	*	LED,CIRCUIT BOARD			
ZENER HZ-5C1	SFR236★	87-021-738	SFR 1K	D915	87-020-110	DIODE 1SS177			
DS446	SFR239★	87-021-737	SFR 470	D917	87-020-110	DIODE 1SS177	LED901★	87-020-613	LED,LN-317GPH (PEAK PROG.METER,-10)
1SS177	SFR240★	87-021-737	SFR 470	LED902★	87-020-613	LED,LN-317GPH (PEAK PROG.METER,-5)	LED902★	87-020-613	LED,LN-317GPH (PEAK PROG.METER,-5)
1SS177	SFR337★	87-021-739	SFR 2.2K	LED903★	87-020-613	LED,LN-317GPH (PEAK PROG.METER,0)	LED903★	87-020-613	LED,LN-317GPH (PEAK PROG.METER,0)
1SS177	SFR338★	87-021-739	SFR 2.2K	LED904★	87-020-612	LED,LN-217RPH (PEAK PROG.METER,+3)	LED904★	87-020-612	LED,LN-217RPH (PEAK PROG.METER,+3)
ZENER HZ6B1L	=== KEY BOARD CIRCUIT BOARD SECTION ===			LED905★	87-020-612	LED,LN-217RPH (PEAK PROG.METER,+6)	LED905★	87-020-612	LED,LN-217RPH (PEAK PROG.METER,+6)
1SS177	PCB-B	*	KEY BOARD CIRCUIT BOARD	LED907★	87-020-399	LED,LN350GPH (DECK-1,DIRECTION ►)	LED907★	87-020-399	LED,LN350GPH (DECK-1,DIRECTION ►)
1SS177	D813	87-020-110	DIODE 1SS177	LED908★	87-020-399	LED,LN350GPH (DECK-2,DIRECTION ►)	LED908★	87-020-399	LED,LN350GPH (DECK-2,DIRECTION ►)
1SS177	D815	87-020-110	DIODE 1SS177	LED910★	87-020-612	LED,LN-217RPH (REVERSE MODE =)	LED910★	87-020-612	LED,LN-217RPH (REVERSE MODE =)
ZENER HZ-5C1	D816	87-020-110	DIODE 1SS177	LED911★	87-020-612	LED,LN-217RPH (REVERSE MODE =)	LED911★	87-020-612	LED,LN-217RPH (REVERSE MODE =)
ZENER HZ11A2	D817	87-020-110	DIODE 1SS177	LED912★	87-020-612	LED,LN-217RPH (REVERSE MODE ◀)	LED912★	87-020-612	LED,LN-217RPH (REVERSE MODE ◀)
1SS177	D818	87-020-110	DIODE 1SS177	LED913★	87-020-613	LED,LN-317GPH (DOLBY B-C NR B TYPE)	LED913★	87-020-613	LED,LN-317GPH (DOLBY B-C NR B TYPE)
1SS177	D819	87-020-110	DIODE 1SS177	LED914★	87-020-612	LED,LN-217RPH (DOLBY B-C NR C TYPE)	LED914★	87-020-612	LED,LN-217RPH (DOLBY B-C NR C TYPE)
1SS177	D820	87-020-110	DIODE 1SS177	=== DOLBY-NR CIRCUIT BOARD SECTION ===					
DS446	D821	87-020-110	DIODE 1SS177	87-030-109 DOLBY UNIT HA12088J (W/PCB D)					
DS446	D822	87-020-110	DIODE 1SS177	=== DECK-1 CIRCUIT BOARD SECTION ===					
DS446	D823	87-020-110	DIODE 1SS177	PCB-E	*	DECK-1 CIRCUIT BOARD	S71	86-517-621	LEAF SW (DECK-1,CAST)
DS446	D824	87-020-110	DIODE 1SS177	S71	86-517-621	LEAF SW (DECK-1,CAST)	S72	86-517-621	LEAF SW (DECK-1,CO)
1SS177	D825	87-020-110	DIODE 1SS177	SFR73 ★	87-021-825	SFR 22K			
1SS177	D826	87-020-110	DIODE 1SS177						
1SS177	D827	87-020-110	DIODE 1SS177						
1SS177	D828	87-020-110	DIODE 1SS177						
1SS177	D829	87-020-110	DIODE 1SS177						

Note: Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board 82-112-601

PCB-A 82-112-602

PCB-B 82-112-603

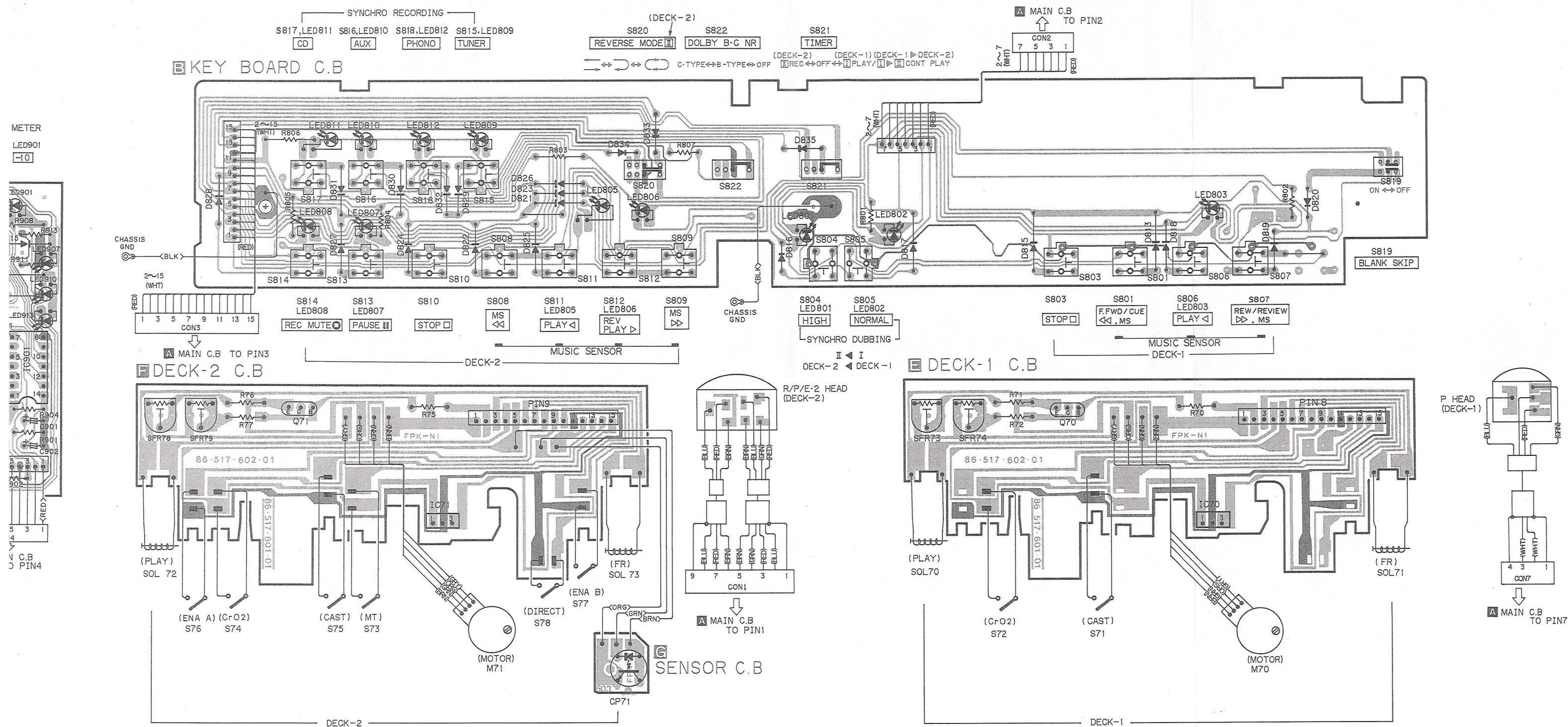
PCB-C 82-112-605

Combination circuit board 86-517-601

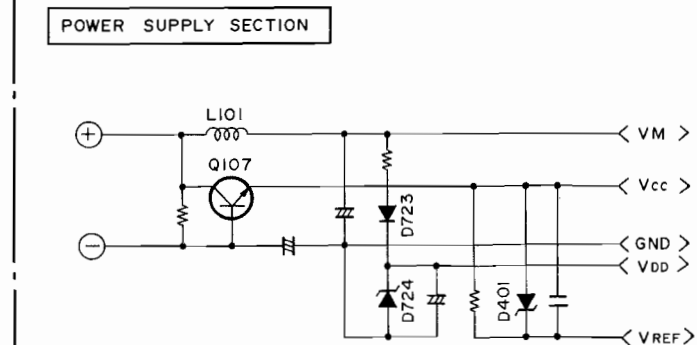
PCB-E, F 86-517-602

PCB-G 86-517-603

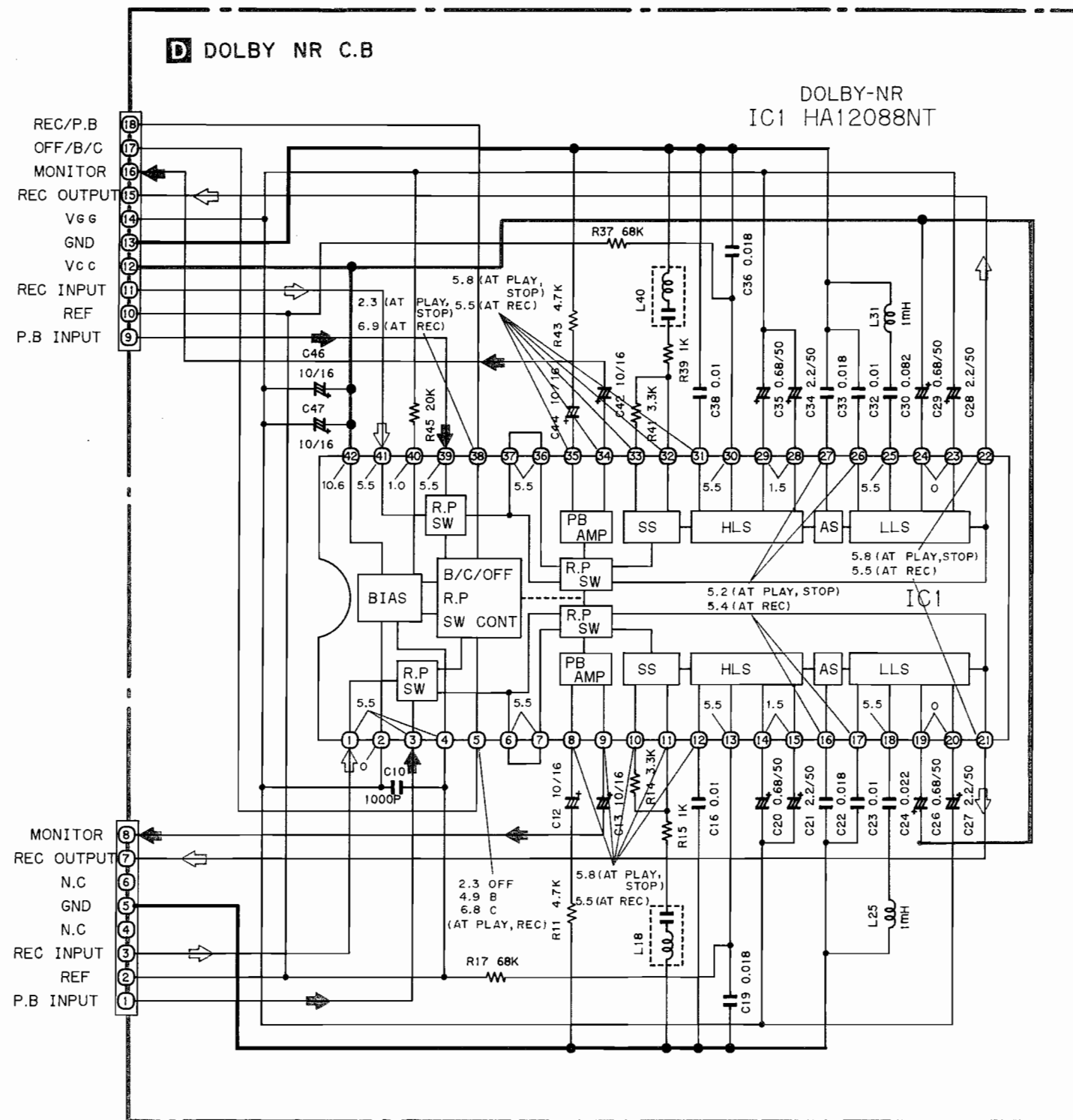




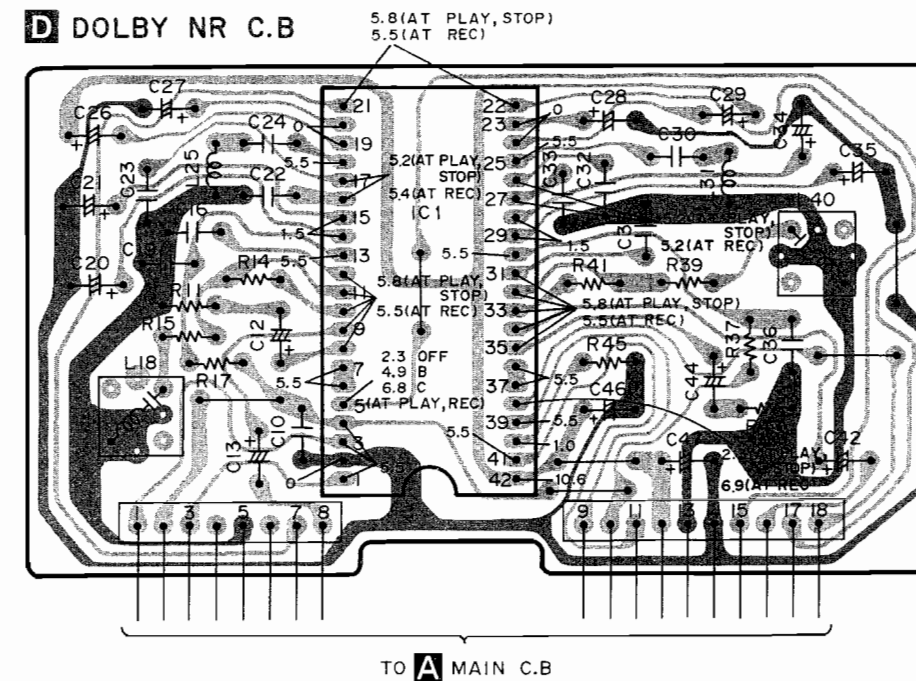
- NOTES**
- (1) Earth pattern Others pattern
 - (2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. An asterisk (★) indicates that the value was measured with a vacuum-tube voltmeter during recording.



A
B
C
D
E
F
G
H
I
J
K



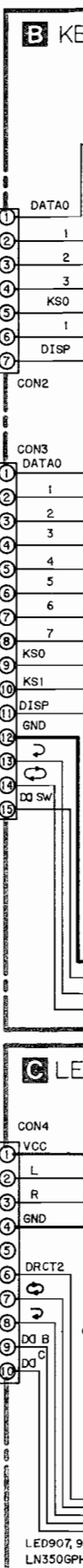
- NOTES:**
- 1) B (+) power supply
 - 2) Signal path
 - Rec path



PIN NAMES OF IC1 (HA12088NT)

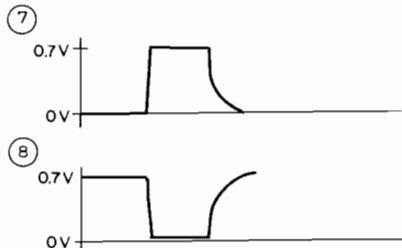
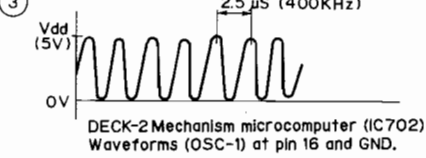
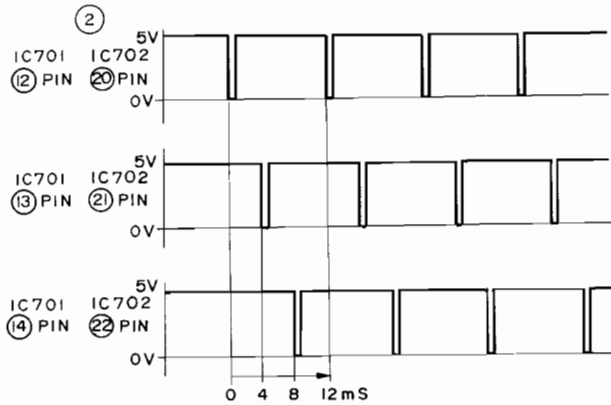
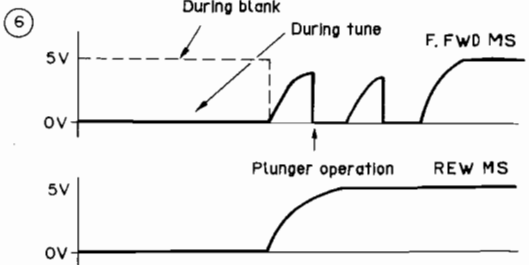
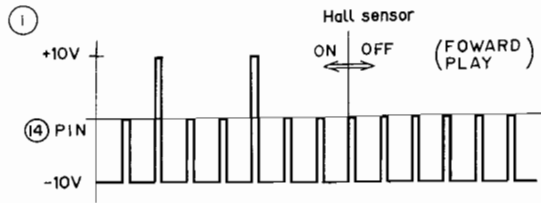
PIN NO.	1	2	3	4	5	6	7	8	9	10	11
NAMES	REC IN	GND	PB IN	REF	B/C/OFF	IA OUT	NR IN	PB IN	PB OUT	SS IN	SS OUT
PIN NO.	12	13	14	15	16	17	18	19	20	21	22
NAMES	HLS CCR	HLS HPF	HLS DET 1	HLS DET 2	AS	LLS CCR	LLS HPF	LLS DET 1	LLS DET 2	REC OUT	REC OUT
PIN NO.	23	24	25	26	27	28	29	30	31	32	33
NAMES	LLS DET 2	LLS DET 1	LLS HPF	LLS CCR	AS	HLS DET 2	HLS DET 1	HLS HPF	HLS CCR	SS OUT	SS IN
PIN NO.	34	35	36	37	38	39	40	41	42		
NAMES	PB OUT	PB IN	NR IN	IA OUT	RP	PB IN	BIAS I	REC IN	Vcc		

- NOTES** (1) Earth pattern Others pattern
- (2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.

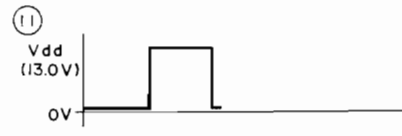
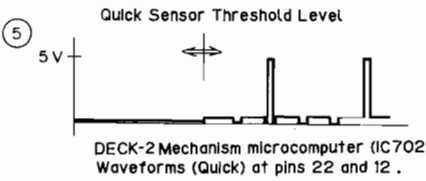
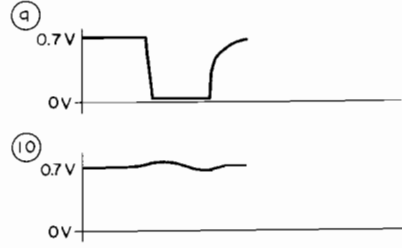
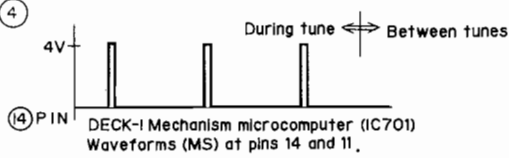


WAVEFORMS

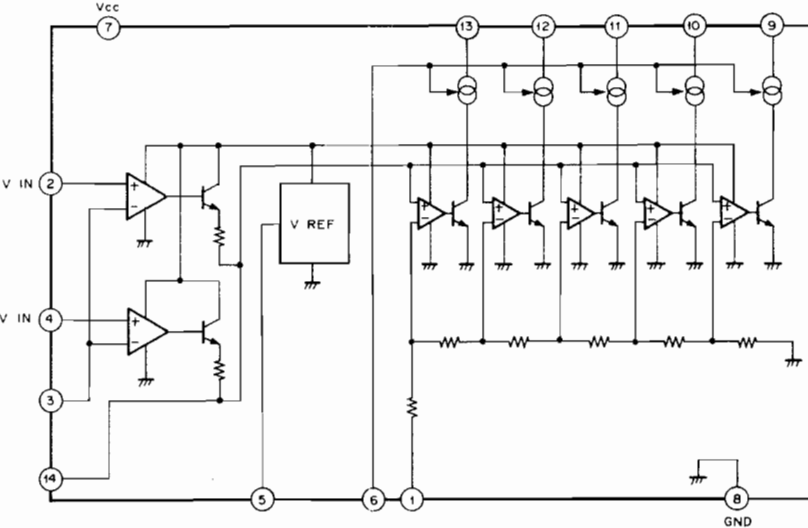
DECK-1 Mechanism microcomputer (IC701)
Waveforms (Auto Stop) between pins 14 (Scope GND) and 9 (Scope HOT).



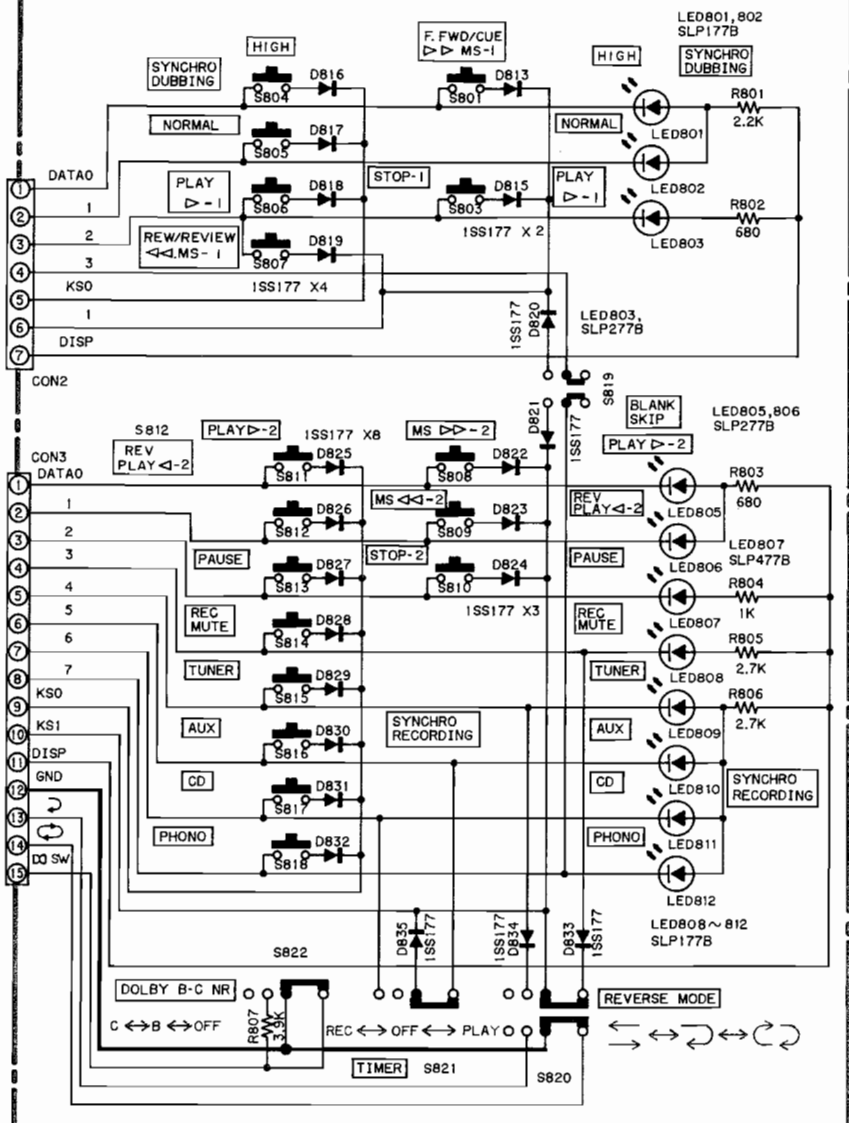
DECK-1,2 Mechanism microcomputer (IC701,IC702)
Waveforms at (KS pins) and GND.
KEY SCAN



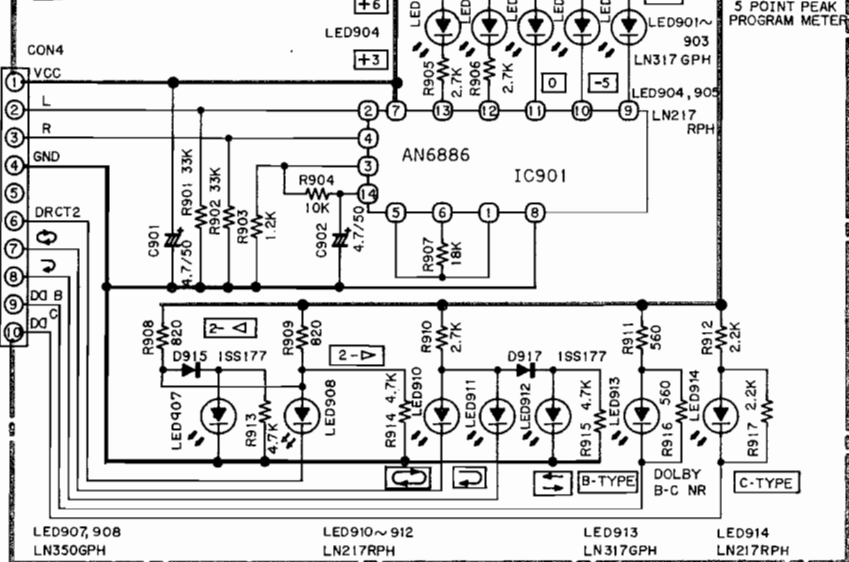
IC BLOCK DIAGRAM (AN6886)



KEY BOARD C.B



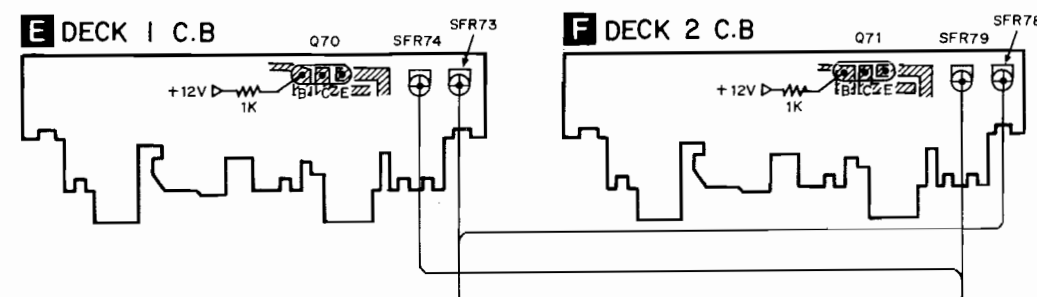
LED C.B



1:DECK-1
2:DECK-2

ere are no signals.

• ADJUSTMENT



2. High Speed Adjustment (DECK-1, DECK-2)

Note: Be sure to set the unit to the playback mode when installing the resistor. After the adjustment is completed, remove the resistor and set the unit to the stop mode.

Settings:

- Test tape: TTA-111H
- Test point: J3 PIN3 (Lch) PIN5 (Rch)
- Adjustment location:

SFR-73 (Deck-1)
SFR-78 (Deck-2)

Method: Connect a 1kΩ resistor to the base of Q70 (Q71) and supply +12V. Playback the test tape and adjust so the frequency becomes 3000 Hz.

3. Normal Speed Adjustment (DECK-1, DECK-2)

Note: (1) Perform this adjustment after the high speed adjustment is completed.
(2) Be sure to remove the 1kΩ resistor which was used in the high speed adjustment.

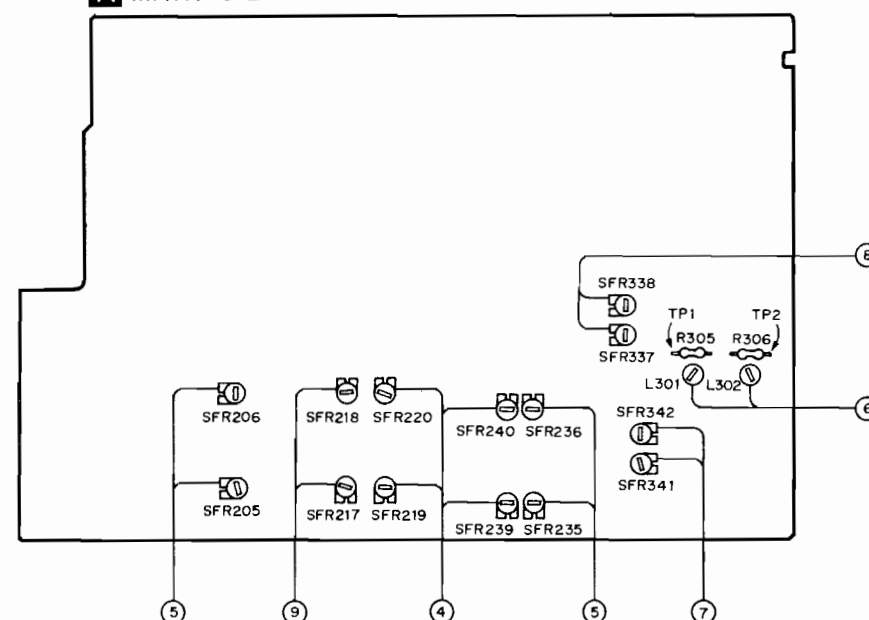
Settings:

- Test tape: TTA-111S
- Test point: J3 PIN3 (Lch) PIN5 (Rch)
- Adjustment location:

SFR-74 (Deck-1)
SFR-79 (Deck-2)

Method: Playback the test tape and adjust the SFRs for frequency of 3,000 Hz.

A MAIN C.B.

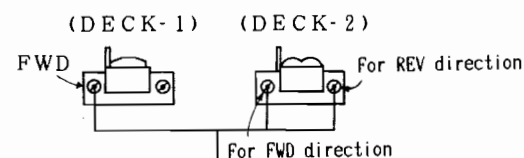


6. Trap Coil Adjustment (L301, L302)

Settings:

- Test tape: TTA-119MP
- Test point: TP1 (L301) TP2 (L302)
- Adjustment location: L301 L302

Method: Set the unit to the record mode and adjust so the recording bias leak voltages at TP1 and TP2 are minimum.



1. Azimuth Adjustment (DECK-1, DECK-2)

Settings:

- Test tape: TTA-317H
- Test point: J3 PIN3 (Lch) PIN5 (Rch)
- Adjustment location: Azimuth adjustment screw

Method: Playback the 10kHz section of the test tape and adjust the screw for maximum output.

4. Playback Frequency Response Adjustment (DECK-1, DECK-2)

Settings:

- Test tape: TTA-317H
- Test point: J3 PIN3 (Lch) PIN5 (Rch)
- Adjustment location:

SFR219 (Deck-1, Lch)
SFR220 (Deck-1, Rch)
SFR239 (Deck-2, Lch)
SFR240 (Deck-2, Rch)

Method: Playback the test tape and adjust so that output difference between the 1kHz and 10kHz signals becomes +0.5 - 1dB.

5. Playback Sensitivity Adjustment (DECK-1, DECK-2)

Settings:

- Test tape: TTA-161
- Test point: J3 PIN3 (Lch) PIN5 (Rch)
- Adjustment location:

SFR205 (Deck-1, Lch)
SFR206 (Deck-1, Rch)
SFR235 (Deck-2, Lch)
SFR236 (Deck-2, Rch)

Method: Playback the test tape and adjust so that output levels at pins 3 (Lch) and 5 (Rch) of J3 become 440mV.

9. High Speed Dubbing Frequency Response Adjustment

Settings:

- Test tape: TTA-317H (Deck-1) TTA-119J (Deck-2)
- Test point: J3 PIN3 (Lch) PIN5 (Rch)
- Adjustment location: SFR217 (Lch) SFR218 (Rch)

Method: Insert TTA-317H into DECK-1 (119J to 2) perform high-speed dubbing and adjust so that the recording/playback output levels of DECK-2 become 0 to -1.0dB.

8. REC/PB Sensitivity Adjustment (DECK-2)

Settings:

- Test tape: TTA-119J
- Test point: J3 PIN3 (Lch) PIN5 (Rch)
- Adjustment location:

SFR337 (Deck-2, Lch)
SFR338 (Deck-2, Rch)

- Input signal: Supply a 1kHz signal and adjust so the outputs at pins 3 (Lch) and 5 (Rch) of J3 become 44mV.

Method: Record and playback a 1kHz signal and adjust so that the playback output level becomes the same.

7. REC/PB Frequency Response Adjustment (DECK-2)

Settings:

- Test tape: TTA-119J
- Test point: J3 PIN3 (Lch) PIN5 (Rch)
- Adjustment location:

SFR341 (Deck-2, Lch)
SFR342 (Deck-2, Rch)

- Input signal: Supply a 1kHz signal and adjust so the outputs at pins 3 (Lch) and 5 (Rch) of J3 become 44mV.

Method: Record and playback the 1kHz and 10kHz signals, and adjust so the output difference becomes -0.5 ± 0.5dB.

Practical Service Figure

Wow & flutter:	Less than 0.08% (DE Less than 0.08/0.01 (FWD./REV.) (DEC
Pinch roller pressure:	290 ± 70g (2.84 ± 0 (DECK-1, 2)
Take-up torque:	30 ~ 60g-cm (0.29 ~ 0.59mN·m) (DECK-
F.F & REW torque:	130 ± 30g-cm (1.27 ± 0.29mN·m) (DECK-
Back tension:	3 ~ 5g-cm (0.03 ~ 0.0 (DECK-1, 2)
PB output level:	440 ± 30mV (TTA-11
REC/PB output level:	280 ± 50mV (TTA-11
Distortion (REC/PB):	Less than 2.5% (MET CrO ₂)
Noise (PB):	Less than 2% (NORM. Less than 1.5/1.5mV (METAL, CrO ₂ DOL C OFF/ON)
Erasing ratio:	More than 57dB (at 1
Signal to Noise ratio (REC/PB):	More than 36dB (NOR DOLBY-NR OFF)
Channel separation:	More than 30dB
Recording bias frequency:	100kHz
Test tape:	NORMAL tape TTA- CrO ₂ tape TTA- METAL tape TTA-

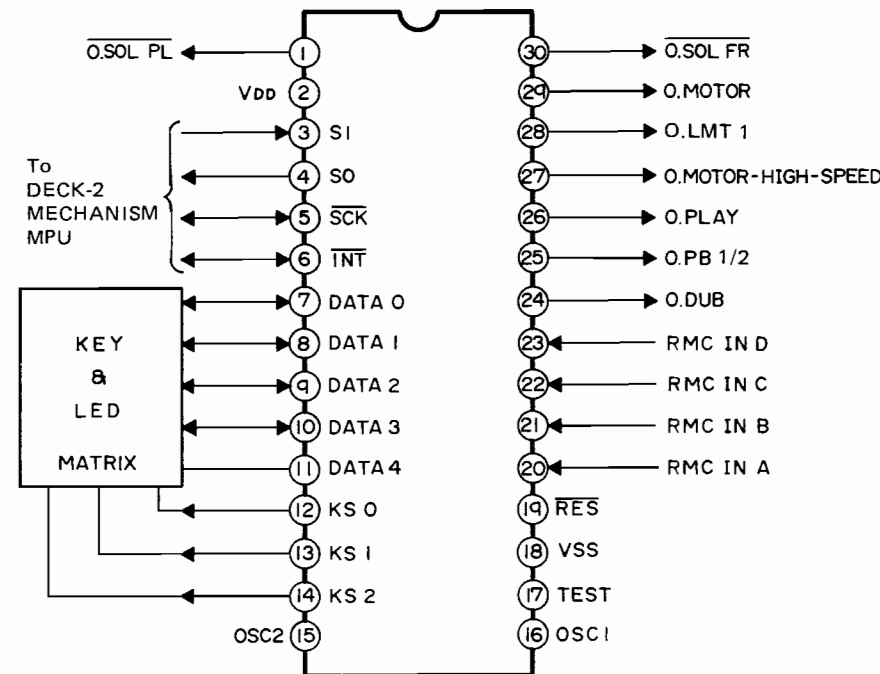
DISCRIPTION OF IC TERMINAL

1. IC, LC6523C-782

1-1. Terminal name

Service Figure

Less than 0.08% (DECK-1)
 Less than 0.08/0.095%
 (FWD./REV.) (DECK-2)
 re: 290±70g (2.84±0.69N)
 (DECK-1, 2)
 30~60g·cm (0.29~
 0.59mN·m) (DECK-1, 2)
 ue: 130±30g·cm (1.27±
 0.29mN·m) (DECK-1, 2)
 3~5g·cm (0.03~0.05mN·m)
 (DECK-1, 2)
 440±30mV (TTA-161)
 level: 280±50mV (TTA-119J)
 . Less than 2.5% (METAL,
 CrO₂)
 Less than 2% (NORMAL)
 Less than 1.5/1.5mV
 (METAL, CrO₂ DOLBY-NR
 C OFF/ON)
 Less than 1.5/1.5mV
 (NORMAL, DOLBY-NR C
 OFF/ON)
 More than 57dB (at 125Hz)
 More than 36dB (NORMAL,
 DOLBY-NR OFF)
 More than 30dB
 uency: 100kHz
 NORMAL tape TTA-119J
 CrO₂ tape TTA-119G
 METAL tape TTA-119MP



Signal flow in the direction indicated by the arrow

1-2. Pin description

Pin No.	Pin Symbol	Description																																																																																			
1	O-SOL PL	PLAY plunger output. With "L", the plunger attracts.																																																																																			
2	V _{DD}	Power supply pin connected to +5 V.																																																																																			
3	SI	Connected to SI of the microprocessor in DECK-2. Connected to SO of the microprocessor in DECK-2. Connected to SCK of the microprocessor in DECK-2. Connected to INT of the microprocessor in DECK-2. These pins are used for the signals transmitting/receiving the data concerning dubbing, mechanism state, remote control input, audio control input, etc.																																																																																			
4	SO																																																																																				
5	SCK																																																																																				
6	INT																																																																																				
7	DATA 0	Input Mode (Key IN)			Output Mode (DISPLAY)																																																																																
		KEY Hi speed DUB	KEY F.F	—	Hi speed DUB																																																																																
8	DATA 1	KEY Normal speed DUB	KEY REW	SW CST	Normal speed DUB																																																																																
9	DATA 2	KEY PLAY	KEY STOP	SIG AUTO STOP	PLAY																																																																																
10	DATA 3	—	KEY BLANK SKIP	—	—																																																																																
11	DATA 4	—	—	SIG MS SIGNAL	—																																																																																
12	KS 0	"L"	"H"	"H"	"H"																																																																																
13	KS 1	"H"	"L"	"H"	"H"																																																																																
14	KS 2	"H"	"H"	"L"	"H"																																																																																
15	OSC 2	Oscillator pin.																																																																																			
16	OSC 1	Oscillator pin.																																																																																			
17	TEST	Connected to ground.																																																																																			
18	V _{SS}	Connected to ground.																																																																																			
19	RES	Reset pin.																																																																																			
20	PC0 (REMOTE DATA A)	Remote Control Input Code Table 0→"L"、1→"H"																																																																																			
21	PC1 (REMOTE DATA B)	<table><tr><th>D</th><th>C</th><th>B</th><th>A</th><th>Details of Command</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>—</td></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td><td>DECK-1、2 Mechanism STOP</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>DECK-2 Mechanism REW</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td><td>DECK-2 Mechanism REV-PLAY</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td><td>DECK-2 Mechanism F-PLAY</td></tr><tr><td>0</td><td>1</td><td>0</td><td>1</td><td>DECK-2 Mechanism FF</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td><td>DECK-2 Mechanism PAUSE</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>DECK-2 Mechanism TUNER REC</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td>DECK-1 Mechanism FF</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td><td>DECK-1 Mechanism PLAY</td></tr><tr><td>1</td><td>0</td><td>1</td><td>1</td><td>—</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td><td>DECK-1 Mechanism REW</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td><td>—</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td><td>—</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>—</td></tr></table>				D	C	B	A	Details of Command	0	0	0	0	—	0	0	0	1	DECK-1、2 Mechanism STOP	0	0	1	0	DECK-2 Mechanism REW	0	0	1	1	DECK-2 Mechanism REV-PLAY	0	1	0	0	DECK-2 Mechanism F-PLAY	0	1	0	1	DECK-2 Mechanism FF	0	1	1	0	DECK-2 Mechanism PAUSE	0	1	1	1	DECK-2 Mechanism TUNER REC	1	0	0	0	DECK-1 Mechanism FF	1	0	1	0	DECK-1 Mechanism PLAY	1	0	1	1	—	1	1	0	0	DECK-1 Mechanism REW	1	1	0	1	—	1	1	1	0	—	1	1	1	1	—
D	C					B	A	Details of Command																																																																													
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0	1					1	0	DECK-2 Mechanism PAUSE																																																																													
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1	0					0	0	DECK-1 Mechanism FF																																																																													
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1	1	0	0	DECK-1 Mechanism REW																																																																																	
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1	1	1	1	—																																																																																	
22	PC2 (REMOTE DATA C)																																																																																				
23	PC3 (REMOTE DATA D)																																																																																				

Transferred to the micro-processor in DECK-2.

Transferred to the microprocessor in DECK-2.

"L"=Low level, "H"=High level

2. IC, LC6523C-3055

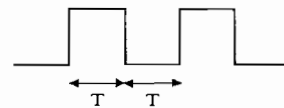
2-1. Terminal name

Pin No.	Pin Symbol	Description
24	O-DUB	Goes "H" during dubbing.
25	O-PB 1/2	Mechanism select output. This outputs "H" when the DECK-1 mechanism is in the playback mode, and outputs "L" when the DECK-2 mechanism is in the playback mode and outputs "H" when the DECK-2 is in the record mode.
26	O-PB	PLAY output. This outputs "H" when the DECK-1 mechanism is designated by the O-PB 1/2 signal and in the PB/REC-PLAY modes.
27	O-M-HS	Motor's high-speed output. The motor speed becomes double when this pin goes "H".
28	O-LMT-1	LINE MUTE output. When the DECK-1 mechanism is designated by the O-PB 1/2 signal, this pin outputs the line mute signal of the DECK-1 mechanism. This always outputs "H" when the DECK-2 mechanism is designated.
29	O-MOTOR	Motor drive output. The motor is driven when this pin is "H". This pin outputs "L" only when both mechanisms are in the stop modes.
30	O-SOL-FR	FF/REW plunger output. With "L", the plunger attracts. (Refer to the timing chart.)

※ The DATA 0~4 input/output pins are "L" active.

As to the duty of the key input time and display output time, the display output duty ratio should be more than 90%.

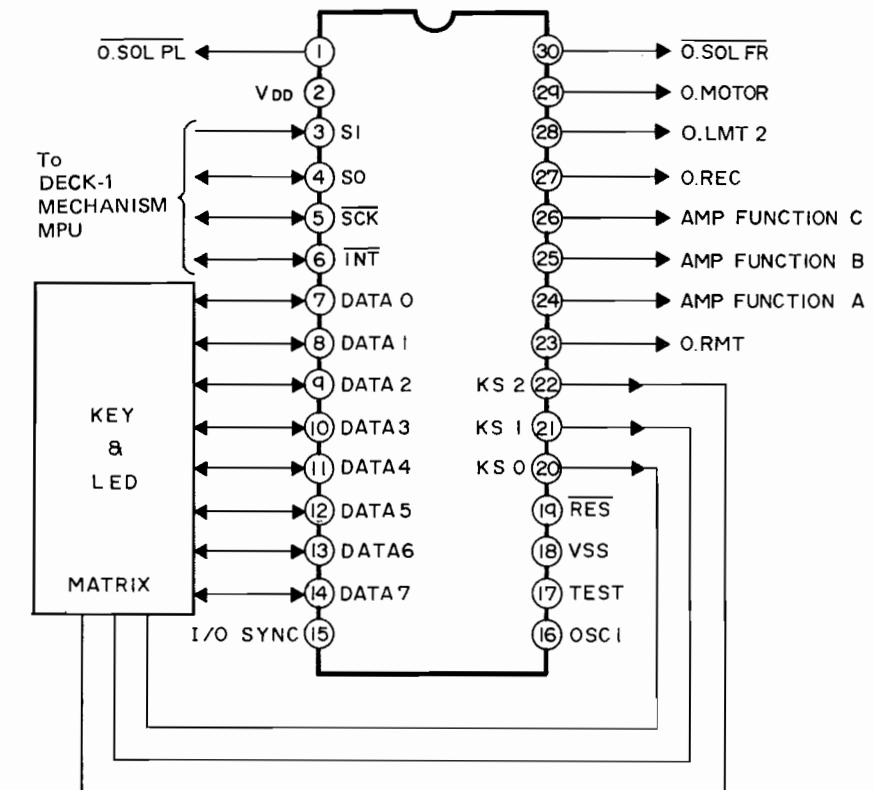
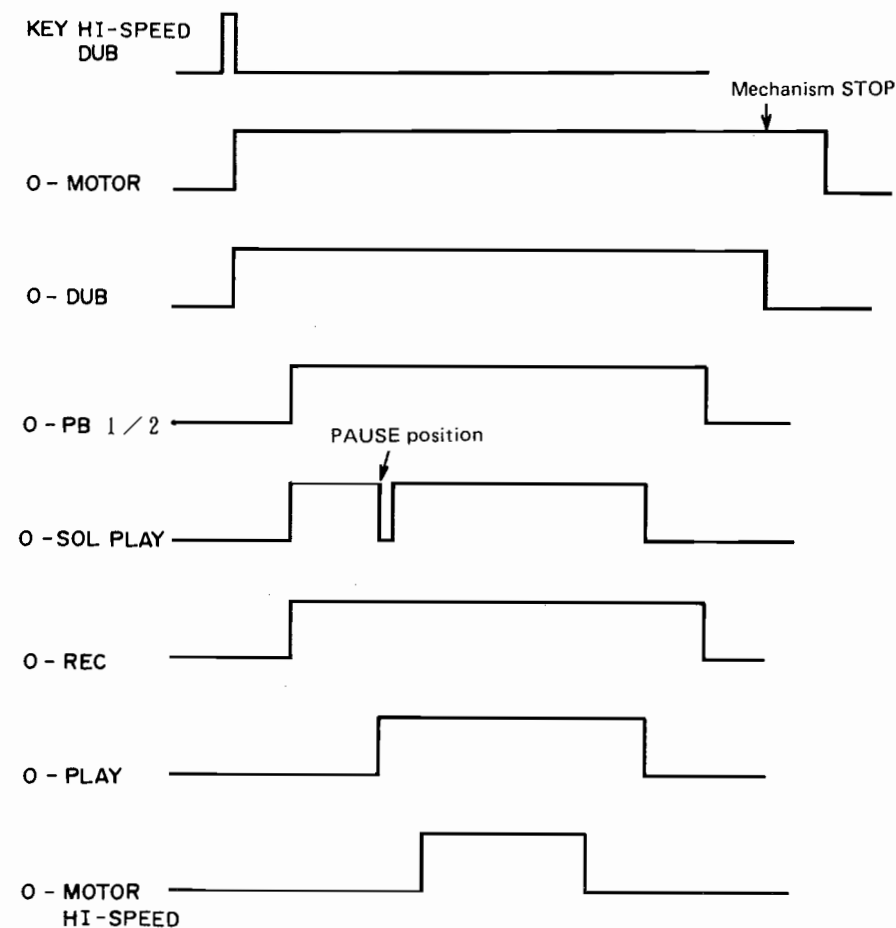
※ SIG-AUTO STOP PULSE



T should be 4 seconds or more during play.

The auto stop function should work when T is more than 0.5 second during CUE, FF, REW and REVIEW modes.

TIMING CHART DURING DUBBING



Signal flow in the direction indicated by the arrow

2-2. Pin description

Pin No.	Pin Symbol	Description			
1	O-SOL PL	PLAY plunger output. With "L", the plunger attracts.			
2	V _{DD}	Power supply pin connected to +5V.			
3	SI	Connected to SI of the microprocessor in DECK-1. Connected to SO of the microprocessor in DECK-1. Connected to SCK of the microprocessor in DECK-1. Connected to INT of the microprocessor in DECK-1.	These pins are used for the signals transmitting/receiving the data concerning dubbing, mechanism state, remote control input, audio control input, etc.		
4	SO				
5	SCK				
6	INT				
		(KEY IN)		(DISPLAY)	
		Input Mode		Output Mode	
7	DATA 0	KEY ► PLAY	KEY ►► F.F	SW DRCT (F.PLAY SIDE ON)	KEY ► PLAY
8	DATA 1	KEY ◄ REV PLAY	KEY ◄◄ REW	SW REC ENA (B)	◄ REV PLAY
9	DATA 2	KEY PAUSE	KEY ■ STOP	SW REC ENA (A)	PAUSE
10	DATA 3	KEY ○ REC MUTE	SW ∞ MODE	SW CST	○ REC MUTE
11	DATA 4	KEY TUNER REC	SW ∩ MODE	SIG AUTO STOP	TUNER REC
12	DATA 5	KEY PHONO REC	SW ⊖ TIMER PLAY	SIG QUICK	PHONO REC
13	DATA 6	KEY CD REC	SW ⊖ TIMER REC	SIG MS SIG	CD REC
14	DATA 7	KEY AUX REC	SW BLANK SKIP	SELECT MS DISABLE	AUX REC
20	KS 0	"L"	"H"	"H"	"H"
21	KS 1	"H"	"L"	"H"	"H"
22	KS 2	"H"	"H"	"L"	"H"

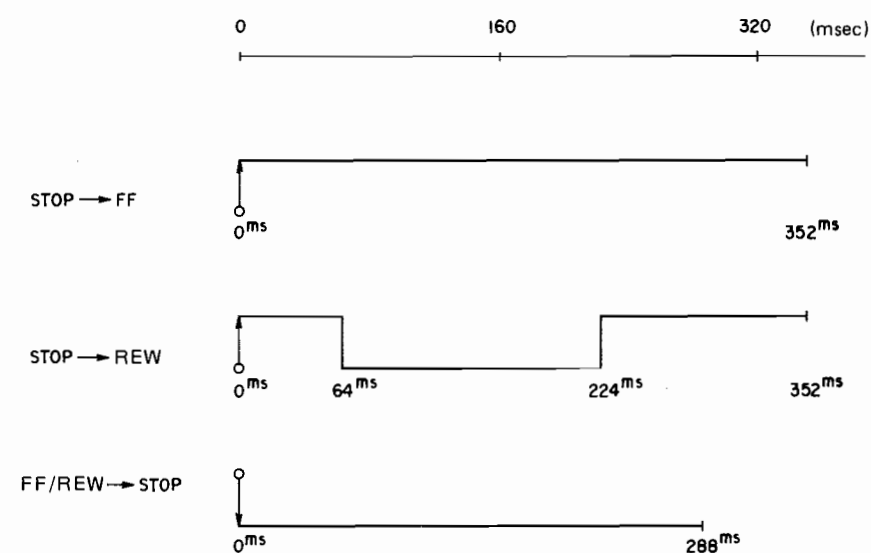
"L"≡Low level, "H"≡High level

Pin No.	Pin Symbol	Description																		
15	PH0 (I/O SYNC)	"H" initializes the microprocessor when reset pulse is applied. I: Player sync input. The arm down, sends "L" O: Player start output. "L" starts the player. 1) The recording function output should precede the player output by 300 msec. 2) While the player start pulse width is 120 msec. 3) The sync input is not applied for 120 msec as the player start pulse is being output and for 300 msec after the pulse has been output. 4) The player start pulse output and sync input should be applied for PHONO and CD functions.																		
16	OSC1	Oscillator pin.																		
17	TEST	Connected to ground.																		
18	V _{SS}	Connected to ground.																		
19	RES	Reset pin.																		
23	O-RMT	REC MUTE output. MUTE OFF with "L". ("H" initializes the microprocessor when reset pulse is applied.)																		
24	AMP FUNCTION A	"L" initialize during RESET (active "H") <table><tr><th>C</th><th>B</th><th>A</th></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table> F-DECK (P. B START) TUNER REC AUX REC CD REC PHONO REC	C	B	A	0	0	1	1	0	0	1	0	1	1	1	0	1	1	1
C	B		A																	
0	0		1																	
1	0	0																		
1	0	1																		
1	1	0																		
1	1	1																		
25	AMP FUNCTION B																			
26	AMP FUNCTION C																			
27	O-REC	REC output. REC with "H"																		
28	O-LMT 2	LINE MUTE output. When the DECK-2 mechanism is designated by the O-PB 1/2 signal, this pin outputs the line mute signal of the DECK-2 mechanism "H". MUTE off "L"																		
29	O-MOTOR	Motor drive output. The motor is driven when this pin is "H". This pin outputs "L" only when both mechanisms are in the stop modes.																		
30	O-SOL F/R	FF/REW plunger output. With "L", the plunger attracts. (Refer to the timing chart.)																		

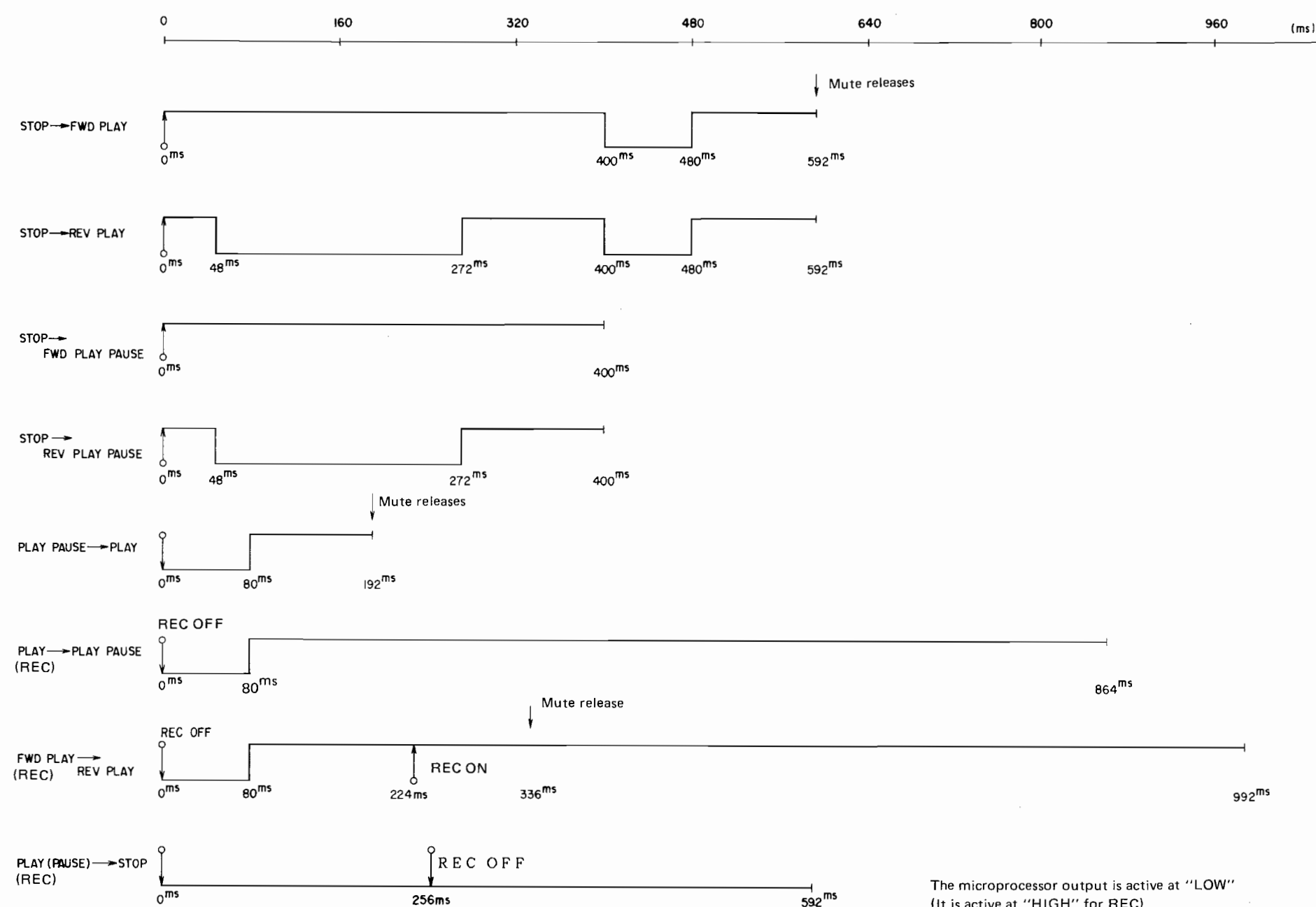
The DATA 0~7 inputs/outputs are "L" active.

As to the key input time and display output time duty, the display output duty ratio should be more than 90%.

Timing Chart (Mechanism)

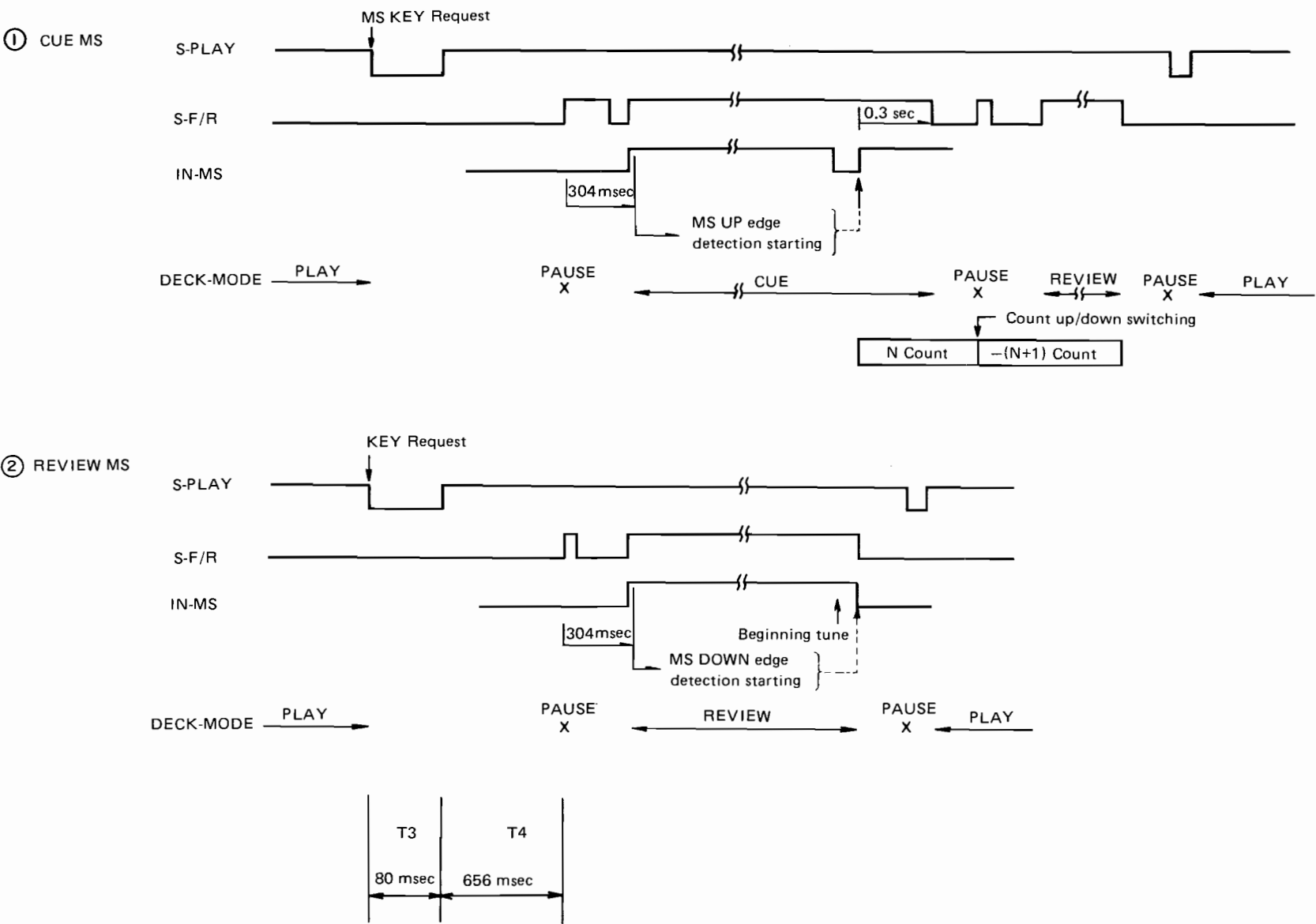


Outputs of micro computer are active-low.



The microprocessor output is active at "LOW"
(It is active at "HIGH" for REC)

MS operation timing chart



The line on the left shows when CUE MS operating to skip to the next tune from the middle of the tune being heard.

When the beginning of the tune is detected, the mechanism is left as it is for 0.3msec and PAUSE resumes.

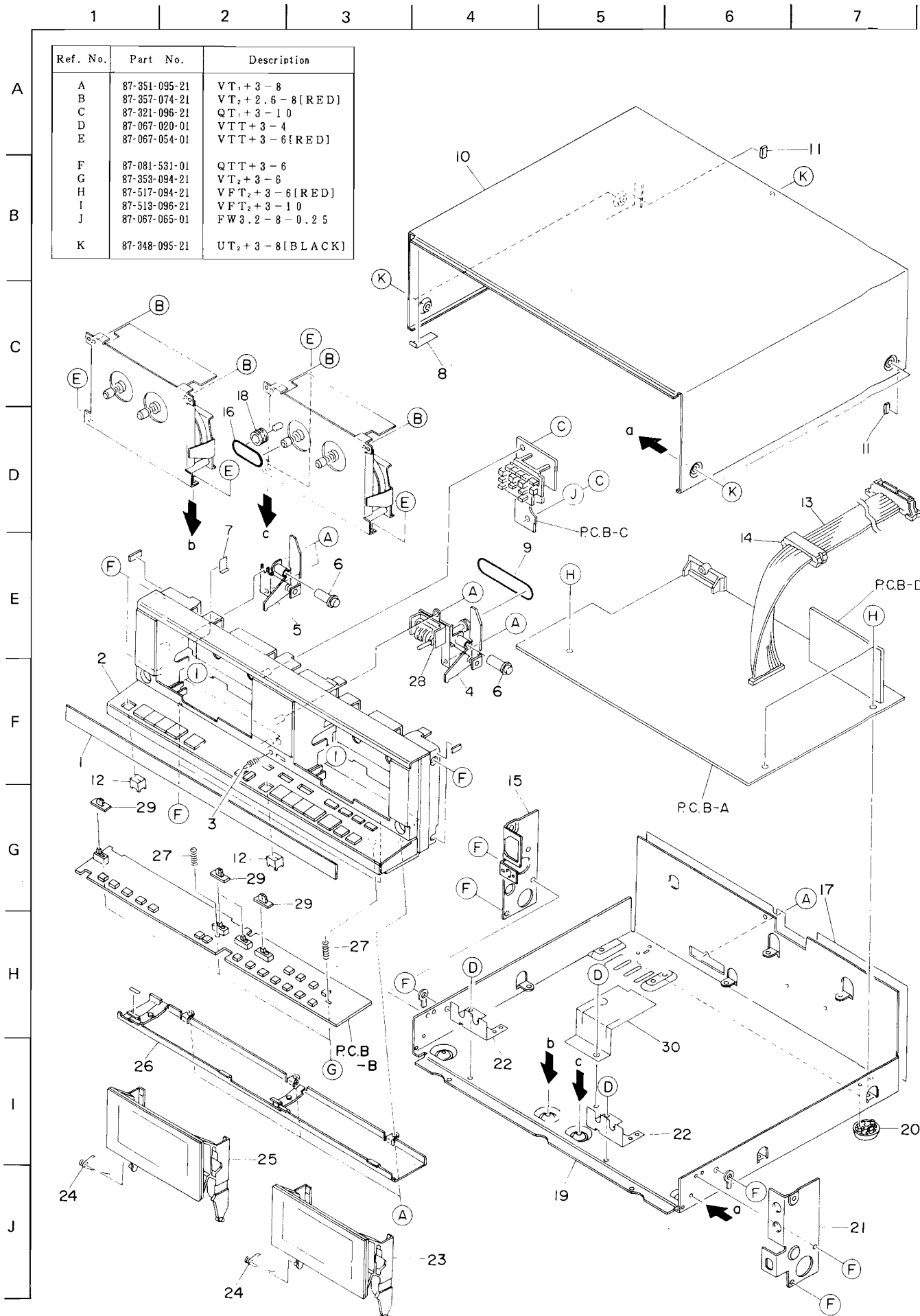
The IN-MS UP edge (beginning of tune) is detected 304 msec after the mechanism starts attracting the S-F/R.

Assume the count number for the time being N.
The mechanism is shifted to the REVIEW operation, and when the tape is rewound by a count of N + 1, the REVIEW is released.
When PAUSE is reentered, the PAUSE is released and the PLAY mode is entered.

Immediately when the IN-MS falls, the S-F/R is turned off.
Then PAUSE is entered after 288 msec. Release the PAUSE mode.
The IN-MS DOWN edge (a little before tune) is detected 304 msec after the mechanism starts attracting the S-F/R.

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EXPLODED VIEW-1



MECHANICAL PARTS LIST

- ※-mark in this part list shows exclusive part.
- ★-mark means less required items availabilities may be limited.
- No availability part is marked with --- in Part No. list.

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1-1	★82-122-003	DECORATIVE PANEL 8 (B)	※	1
	1-2	★82-122-001	FRONT CABINET 8 (B) Ass'y	※	1
	1-3	★82-110-223	C-SPRING, DOOR CASSETTE	FX-A770	1
	1-4	★82-112-202	HOLDER EJECT 4 Ass'y	FX-W500	1
	1-5	★82-110-206	HOLDER EJECT Ass'y	FX-A770	1
	1-6	★82-534-264	GEAR, OIL-DAMP		2
	1-7	---	SPACER, EJECT		1
	1-8	★81-735-214	PLATE SPRING B, EARTH		1
	1-9	82-445-235	BELT, COUNTER		1
	1-10	★82-120-007	STEEL CABINET 7 (B)	FX-R330	1
	1-11	---	G CUSHION		2
	1-12	★82-136-022	KNOB, EJECT A	FX-50	2
	1-13	★82-115-651	CONNECTION CORD 13P		1
	1-14	★82-114-215	CORD BUSHING 13P		1
	1-15	---	HOLDER, SIDE 3L		1
	1-16	82-142-203	COUNTER BELT		1
	1-17	---	JACK PLATE (8) Y		1
	1-18	★82-146-202	RELAY PULLEY	FX-W60	1
	1-19	---	AMP. CHASSIS (8)		1
	1-20	★87-055-057	FOOT B		2
	1-21	---	HOLDER, SIDE R		1
	1-22	---	SHIELD PLATE, HEAD		2
	1-23	★82-112-007	CASSETTE BOX R Ass'y	FX-W550	1
	1-24	★82-197-207	T-SPRING, EJECT	FX-90	2
	1-25	★82-122-004	CASSETTE BOX L Ass'y	※	1
	1-26	★82-111-012	BOTTOM CABINET Ass'y	FX-W550	1
	1-27	★82-146-214	C-SPRING, FRONT EARTH	FX-W60	2
	1-28	★87-040-185	COUNTER 4		1
	1-29	★82-142-015	SLIDE KNOB		4
	1-30	---	SHIELD PLATE		1

EXPLODED VIEW-2

1

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3

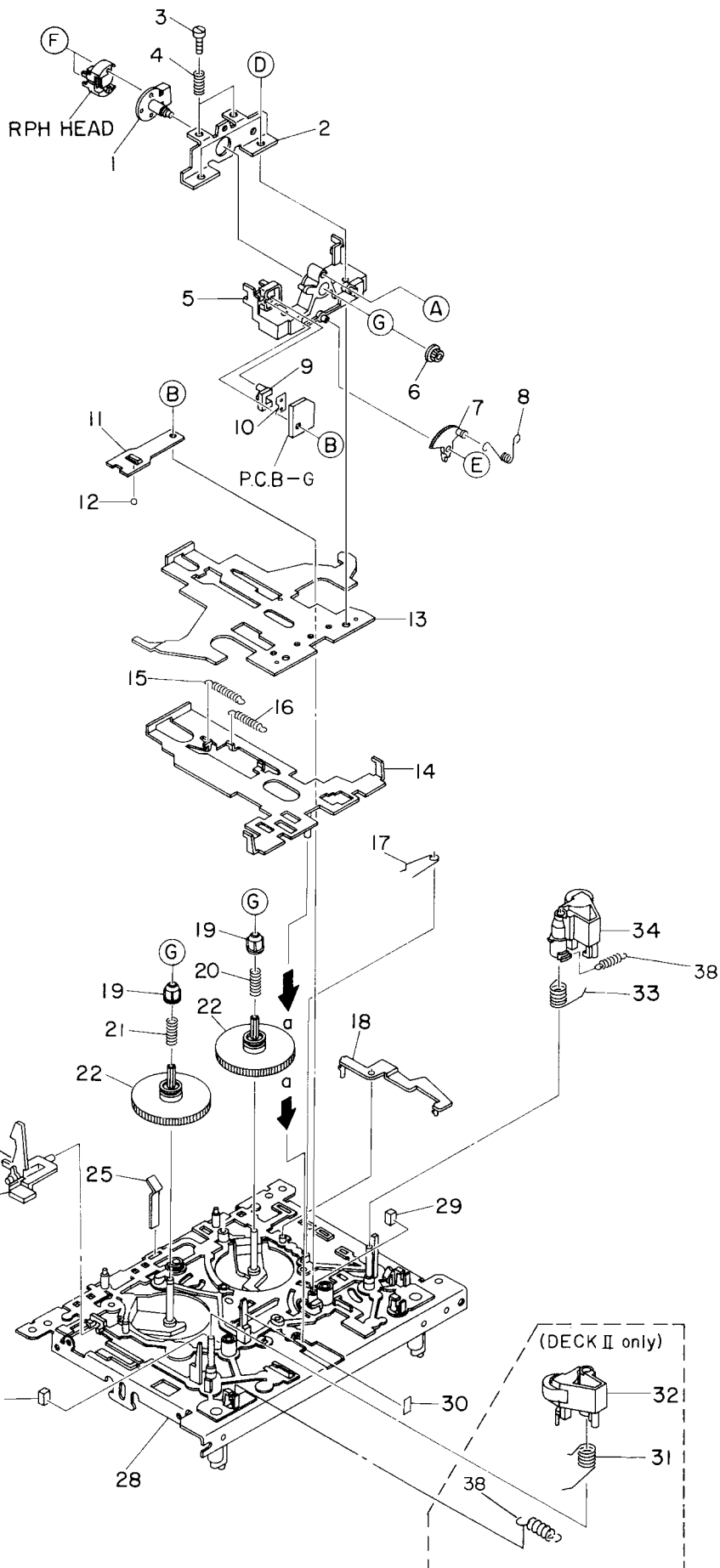
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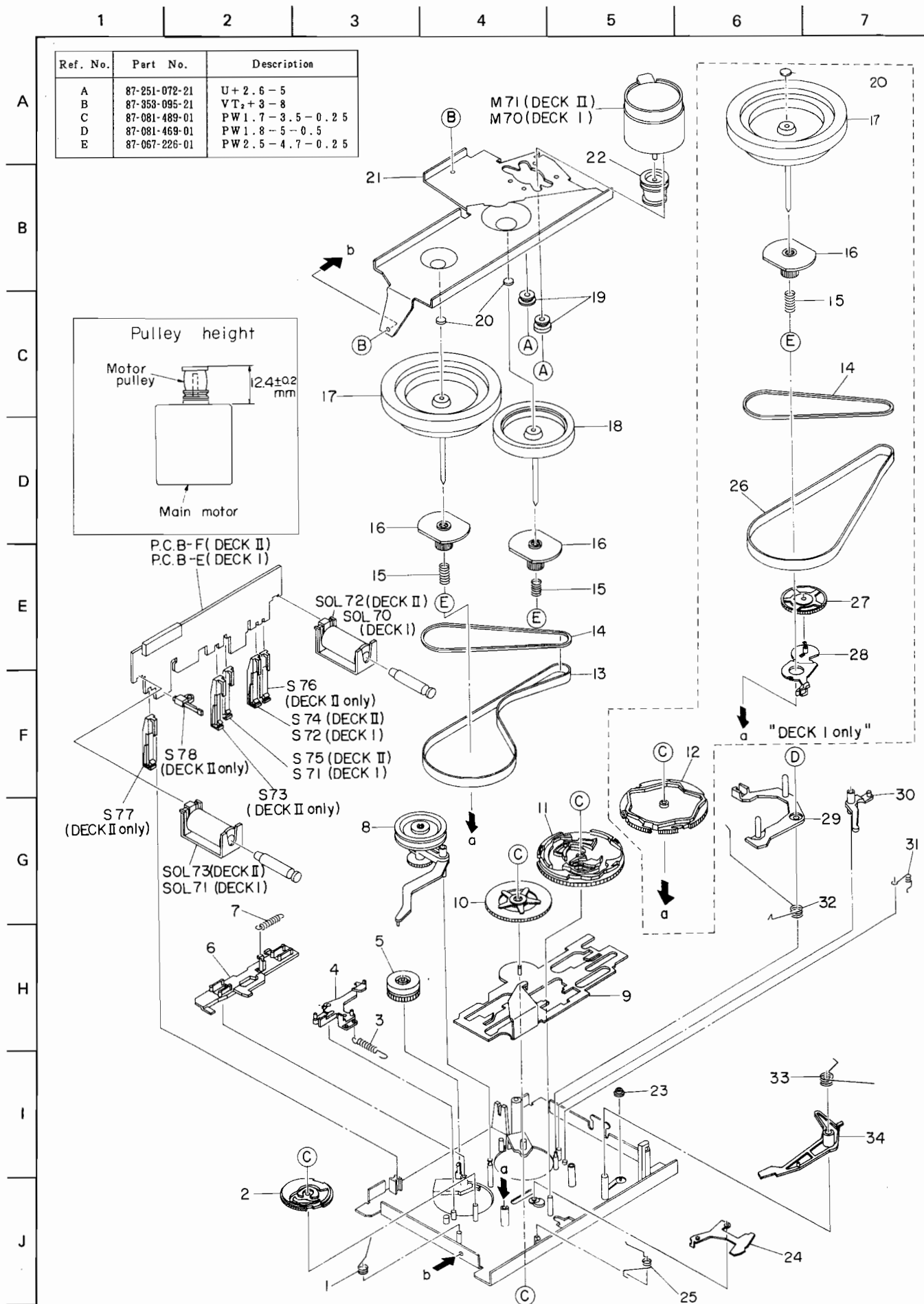
7

Ref. No.	Part No.	Description
A	87-251-036-21	U+2-8
B	87-351-033-21	VT ₁ +2-4
C	87-067-218-01	VTT+2-10
D	87-081-504-01	VTT+2.6-10
E	87-067-217-01	VFT ₂ +2-6
F	87-067-177-01	V+1.6-5.5
G	87-067-105-01	PW3.4-8-0.5



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	2-1	86-513-267	HEAD HOUSING Ass'y (DECK II)		1
	2-2	★86-517-268	HOLDER, AZIMUTH SCREW (DECK II)		1
	2-3	86-517-296	AZIMUTH SCREW (DECK II)		2
	2-4	★86-517-291	C-SPRING, AZIMUTH (DECK II)		2
	2-5	★86-517-269	HEAD BASE Ass'y (DECK II)		1
	2-6	86-513-299	GEAR, HEAD HOUSING (DECK II)		1
	2-7	86-517-373	GEAR, HEAD ROLLING A (DECK II)		1
	2-8	★86-517-282	T-SPRING, ROLLING (DECK II)		1
	2-9	★86-517-297	SENSOR LENS (DECK II)		1
	2-10	---	SHEET, SENSOR LENS (DECK II)		1
	2-11	★86-517-275	P-SPRING, ACTUATING CHASSIS		1
	2-12	★87-073-008	STEEL BALL 2.5#		1
	2-13	★86-517-305	ACTUATING CHASSIS R (DECK II)		1
	2-14	★86-517-308	MOVEMENT REVERSE LEVER Ass'y (DECK II)		1
	2-15	★86-519-230	E-SPRING, LEVER MOVEMENT S (DECK I)		1
		★86-517-312	E-SPRING, LEVER MOVEMENT (DECK II)		1
	2-16	★86-517-283	E-SPRING, ACTUATING CHASSIS (DECK I)		1
		★86-519-370	E-SPRING, ACTUATING CHASSIS R (DECK II)		1
	2-17	★86-517-310	T-SPRING, QUICK LEVER (DECK II)		1
	2-18	★86-517-258	LEVER, DIRECTION (DECK II)		1
	2-19	86-517-236	STOPPER, REEL PLATFORM		2
	2-20	★86-517-349	C-SPRING, REEL PLATFORM B		1
	2-21	★86-519-234	C-SPRING, REEL PLATFORM S (DECK I)		1
		★86-517-333	C-SPRING, REEL PLATFORM A (DECK II)		1
	2-22	86-517-235	REEL PLATFORM		2
	2-23	★86-519-209	HEAD BASE S (DECK I)		1
	2-24	★86-517-256	LEVER, EJECT		1
	2-25	★86-517-276	P-SPRING, CASSETTE		1
	2-26	★86-519-241	E-SPRING, EJECT LEVER		1
	2-27	★86-510-211	C-SPRING, HEAD (DECK I)		1
	2-28	---	OUTSERT Ass'y		1
	2-29	---	CUSHION, ACTUATING CHASSIS		2
	2-30	---	SHEET, QUICK (DECK II)		1
	2-31	★86-517-289	T-SPRING, PINCH LEVER R (DECK II)		1
	2-32	86-517-250	PINCH LEVER R Ass'y (DECK II)		1
	2-33	★86-519-210	T-SPRING, PINCH LEVER F (DECK I)		1
		★86-517-277	T-SPRING, PINCH LEVER F (DECK II)		1
	2-34	86-517-248	PINCH LEVER F Ass'y		1
	2-35	★82-598-622	EH DUMMY (DECK I)		1
	2-36	★86-519-215	LEVER MOVEMENT SINGLE Ass'y (DECK I)		1
	2-37	★86-519-217	ACTUATING CHASSIS S (DECK I)		1
	2-38	★86-513-340	E-SPRING, AUTO BLOCKING		3

EXPLODED VIEW-3



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	3-1	★86-517-278	T-SPRING, FR CAM		1
	3-2	86-517-215	GEAR, FR CAM C		1
	3-3	★86-517-346	E-SPRING, TRIGGER LEVER FR		1
	3-4	★86-517-257	TRIGGER LEVER FR		1
	3-5	86-517-238	GEAR, FF		1
	3-6	★86-517-254	LEVER, SLIDE BRAKE		1
	3-7	★86-517-284	E-SPRING, SLIDE BRAKE		1
	3-8	86-517-239	FR PULLEY A Ass'y		1
	3-9	★86-517-263	SLIDE PLATE R Ass'y (DECK II)		1
	3-10	86-517-225	GEAR PLAY R Ass'y (DECK II)		1
	3-11	86-517-336	GEAR MAIN CAM R Ass'y (DECK II)		1
	3-12	86-519-202	GEAR MAIN CAM S (DECK I)		1
	3-13	86-517-354	MAIN BELT R-II-A (DECK II)		1
	3-14	86-517-302	BELT FR-II		1
	3-15	★86-517-323	C-SPRING, FLYWHEEL (DECK II)		3
	3-16	86-517-317	GEAR, FLYWHEEL		3
	3-17	86-517-314	FLYWHEEL DC, F Ass'y		2
	3-18	86-517-318	FLYWHEEL DC, R Ass'y (DECK II)		1
	3-19	★86-513-441	COLLAR		2
	3-20	★86-517-348	FLYWHEEL BEARING		3
	3-21	---	MOTOR HOLDER DC		1
	3-22	86-517-389	MOTOR PULLEY		1
	3-23	86-517-345	COLLAR SLIDE PLATE R (DECK II)		1
	3-24	86-517-306	LEVER QUICK Ass'y (DECK II)		1
	3-25	★86-519-222	T-SPRING, MAIN LEVER (DECK I)		1
	3-26	86-519-231	MAIN BELT S-IIA (DECK I)		1
	3-27	86-519-203	GEAR PLAY S Ass'y (DECK I)		1
	3-28	★86-519-208	LEVER, MAIN GEAR (DECK I)		1
	3-29	★86-517-255	LEVER, SWITCH		1
	3-30	★86-517-253	TRIGGER LEVER, PLAY-B		1
	3-31	★86-517-281	T-SPRING, SLIDE LEVER R (DECK II)		1
	3-32	★86-517-332	T-SPRING, LEVER SWITCH		1
	3-33	★86-517-280	T-SPRING, TRIGGER LEVER PLAY		1
	3-34	★86-517-252	TRIGGER LEVER, PLAY-A		1

■ ACCESSORIES/PACKAGE LIST

Operating Instruction booklet is combined type
and is packed in the individual box of MX-440
or MX-330.

AIWA Co., Ltd. Tokyo Japan

Printed in Japan